# BUTANE-PROPANE

HEADQUARTERS FOR LP-GAS INFORMATION SINCE 1931

Dept of the Interior
Central Libr 2258 Int
18th & C Sts N W Bldg
Washington 25 D C
6285-187-R-4

*for you!* a new high in cylinder quality

the result of Scaife's greatly advanced production techniques

**SCAIFE**

**Dura-Lite**

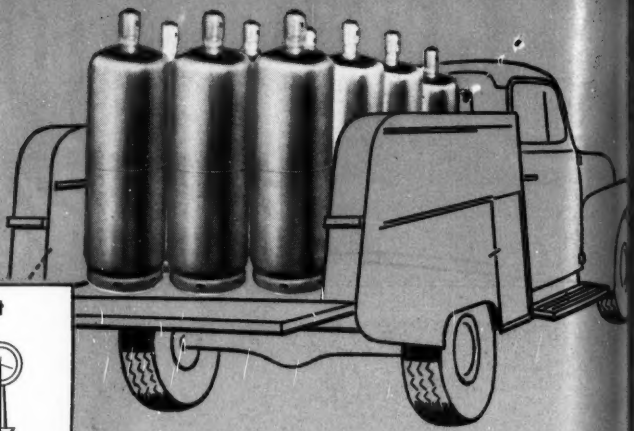
**CYLINDERS**

FOUNDED 1902

**Scaife Company**

Oakmont (Pittsburgh District), Pa.

**NOVEMBER 1952 — 50c per Copy**



lightweight

single circumferential weld

easy-to-read markings

greater strength

improved foot ring

# LOADED WITH FEATURES

## ...THAT GIVE YOU

★ Better Service

★ Longer Life

★ Lower Handling Costs

★ Customer Satisfaction

Hackney MILWAUKEE **LP-GAS CYLINDE**

**PRESSED STEEL TANK COMPA**

*Manufacturer of Hackney Products*

1487 S. 66th St., Milwaukee 14 • 1399 Vanderbilt Concourse Bldg., New York 17 • 227 Hanna Bldg., Cleveland 15 • 936 W. Peachtree St., N.W., Room 112, Atlanta 3 • 208 S. LaSalle St., Room 790, Chicago 4 • 552 Roosevelt Bldg., Los Angeles 17

**CONTAINERS FOR GASES, LIQUIDS AND SO**

ANCO leads

THE

LPG EQUIPMENT

PARADE

WITH

- Immediate pickup or delivery from stock
- Completely stocked warehouses
- Fast delivery on phone orders
- Quality products

It's always best to follow the leader — and that's especially true in the LPG equipment field because your profit depends on a fast, efficient service and completely stocked warehouses. Anco's conveniently located warehouses provide dealers everywhere with the best products available — and the finest service. Yes, that's why Anco leads the parade.

**ANCO'S "PIG" CYLINDER**

This versatile LPG cylinder with many uses on the farm or in town can be transported when filled — Farmers can take into the field for tractor refueling. The ideal unit for Motels, side road stands, restaurants, light domestic loads, and other farm uses. Replaces four bottles.

ANCO
MANUFACTURING & SUPPLY CO.

**217 EAST ARCHER, TULSA, OKLAHOMA**

*Branch Offices:*

Minneapolis, Minnesota  Omaha, Nebraska

E. St. Louis, Ill.

NOVEMBER, 1952

BUTANE-PROPANE News

# CONTENTS

Good Design Makes Tank Trucks Safer *(R. T. Blades, F. J. Heller and Geo. R. Benz)* ..... 53

20,000 Prospects Signed at Mid-South Fair ..... 60

Storage Capacity Not Adequate to Meet Peak demand in Winter *(H. R. Thomas)* 63

Propane Revolutionizes Operations at California Gold Mine..... *(E. C. Clarke)* ....67

Big Underground Storage Protects Winter Customers ..... 70

Getting LPG to Market..... 73

Planning the Distributor-Dealer Bulk Plant—Piping, Valves and Hoses *(Carl Abell)* 75

How Tests Are Made for LPG *(Harvey Menard)* 91

The Way You "Present" the Gas Range Will Determine Your Sales Success *(M. A. Ennis)* 108

Check Unpaid Taxes When Buying a Business..... *(Harold J. Ashe)* 119

Safety Facts for Fuel Transfer the Customer Should Know.... *(D. H. Krug)* 136

Unique Tractor Service Helps Dealers in Minnesota and the Dakotas *(Carl Abell)* 143

•

Letters ..... 43

Comment ..... 47

Beyond the Mains ..... 49

Associations ..... 98

Calendar ..... 106

Products ..... 122

Power ..... 135

The Trade ..... 150

Classified ..... 173

Advertisers' Index ..... 175-176

VOLUME 14 • NUMBER 11

A JENKINS PUBLICATION

**Publication Office**

Los Angeles (4)—198 So. Alvarado St.
Phone DUnkirk 7-4337

**Branch Offices**

New York (36)—11 W. 42nd St.
Raymond M. Schuster, District Mgr.
Peter Wile, Asst. District Mgr.
Phone CH 4-1969

Chicago (1)—333 N. Michigan Ave.
Wm. O. Dannhausen, District Mgr.
Phone FRanklin 2-4615

Cleveland (15)—1836 Euclid Ave.
Frank J. Enright, District Mgr.
Phone PRospect 1-4584

Tulsa—P. O. Box 4055
Craig Espy, District Mgr.
2441 E. 25th Pl.—Phone 7-9807

•

Lynn C. Denny, Executive Editor
Carl Abell, Editor
Lester L. Luxen, Technical Editor
O. D. Hall, Mid-Continental Editor
Raymond A. Grote, Art Editor

•

Jay Jenkins, President and Publisher
Paul Lady, General Manager
D. Newlen, Advertising Manager
Bert Hill, Circulation Manager
Gene Masters, Research

•

BUTANE-PROPANE News is published monthly. Copyright 1952 by Jenkins Publications, Inc., at 198 So. Alvarado St., Los Angeles 4, California. Subscription price: United States and U. S. Possessions, Canada, and countries in Pan-American Postal Union (in advance), 50c per copy, one year $2; two years $3. All other countries one year $4, two years $7. Entered as second-class matter May 29, 1939, at the post office at Los Angeles, California, under the Act of March 8, 1879. Member of Audit Bureau of Circulation, Controlled Circulation Audit, Liquefied Petroleum Gas Assn., National Butane-Propane Assn.

Publishers: GAS, The Magazine of the Gas Utility Industry; HANDBOOK BUTANE-PROPANE GASES; THE BOTTLED GAS MANUAL; BUTANE-PROPANE POWER MANUAL; Annual BUTANE-PROPANE News CATALOG; LPG BULK PLANT MAILING LIST SERVICE; WESTERN METALS.

CIRCULATION NOW 12,000 COPIES MONTHLY

HEADQUARTERS FOR LP-GAS INFORMATION SINCE 1931

**OREGON**

A few months ago we completed a smoke house installation using propane as fuel. There is a slight variance in the temperature which fluctuates a few degrees from the desired temperature. This room is 10 feet long, 6 feet wide and ceilings of 10 ft.

We have installed a full General Control system with automatic thermostat and electric fan to circulate the heat and smoke.

We would appreciate very much if you could inform us what you think should be the normal fluctuation on an installation of this type. Also the normal fluctuation expected if electric heat should be used.

E.L.Y.

We do not think the variance in temperature should exceed 5° F in the installation to which you refer if properly constructed and installed. The high ceiling will tend to cause a temperature gradient between ceiling and floor and this will be particularly noticeable if the room has many cracks and openings for air infiltration. Some things which may bear consideration to help level out temperature variations are:

(1) Burner operating cycle. It is better to throttle the burner down so it is on for long periods and off short periods. A high burner input for short periods tends to cause wider temperature variations.

(2) Thermostat location. It should be placed where it is subjected to good air circulation and where outside draft or radiation will not affect it. Generally, a point in the room opposite the source of heat and about 5 ft. from the floor, or in this case the average level of the meat, should be satisfactory. A little experimentation with the thermostat location may help you improve the temperature control. Placing the thermostat too close to the meat will affect its operation since radiation to the cold meat during early hours of the smoke period will cause it to demand heat and overheat the room. Shield it from this effect.

Fan location and direction is important Location and direction must be such that heated air is uniformly and well distributed. Capacity should also be adequate.

(3) We would expect electric heat to fluctuate much more than gas heat since there is a greater delay in heater response to the thermostat demand. After the electric thermostat calls for heat, there is a delay while the electric heating elements are heating. Again when the thermostat shuts off the heat, electric elements are hot and will continue to add heat for a short time. Gas flame response is almost immediate.—Ed.

●

**FLORIDA**

Can you give me any information on the diffusion of propane gas into the atmosphere? That is to say, if 100 gallons of pure propane gas should leak from a pipe under a build-

ing having 5000 cu. ft. of space, how long would it take for the gas to completely diffuse into the atmosphere?

Would a slightly damp, loose, sandy soil absorb a gas like this and hold it in suspension, or a small part of it, for any lenth of time under the conditions mentioned above?

W.D.

We believe some work has been done by the Compressed Gas Association, 11 W. 42nd St., New York City, regarding the diffusion of L. P. gas into the atmosphere. Possibly you can obtain a synopsis of the tests by writing the secretary of the above association, Frank Fetherston.

However, as you may realize, diffusion of gas into the air may be extremely dangerous in an enclosed area, since it may form an inflammable mixture which can cause severe damage if ignited. Good ventilation is required to get the gas out of the confined space before an inflammable mixture is formed.

We do not think the soil would absorb the gas even though the leakage occurred below ground. True, a certain amount of the gas will replace air in the spaces between soil particles and remain there until forced out by a rising water level or it escapes to the surface by other natural causes.

Lateral movement of L. P. gas could occur in loose soil and instances are of record where this gas, escaping from underground installations, has filtered laterally for considerable distances.—Ed.

●

**WISCONSIN**

Quite a substantial market seems to be developing around here for the use of propane on marine installations. These are commercial fishing boats operating on the Great Lakes. For the most part, these boats are 30 to 40 ft. long with 10 to 12 ft. beam. These are waters subject to Maritime regulation.

The initial question concerns the installation of gas for heat. These boats operate late in the fall until freeze-up time. Our question is not so much the type of heaters but what regulations govern the installation of gas aboard craft operating in navigable waters. Can you tell us what requirements there are pertaining to size and placement of gas storage and regulators, and anything required on piping.

The real plum will be when we get some of these marine engines burning propane, and that is closer than we think. That will, of course, involve much larger storage and so we would like to begin thinking in terms of regulations governing installations that will carry the engine load as well.

Please give us the answers or tell us where to proceed for further information.

N.W.F.

It will be necessary for you to work directly with the U. S. Coast Guard since they are the regulating authority.

An abstract of Agent H. A. Campbell's Water Carrier Tariff No. 6, publishing U. S. Coast Guard Regulations, is included in the Handbook Butane-Propane Gases. Copies of the complete regulations can be obtained from the Bureau of Explosions, 30 Vesey Street, New York City.—Ed.

●

**INDIANA**

Could you please send us the names and addresses of any available manuals dealing with the installation of domestic L. P. gas systems?

We would also appreciate any information pertinent to figuring of space-heater sizes in the most efficient manner.

J.G.F.

Many articles in the past issues of BUTANE-PROPANE *News* have illustrated and described domestic L. P. gas systems. The Handbook Butane-Propane Gases has one or two chapters devoted to this subject.

The Liquefied Petroleum Gas Assn. has issued its "Recommended Good Practice

Rules for Liquefied Petroleum Gas Piping and Appliance Installations in Buildings," which can be ordered by writing to them at 11 So. La Salle St., Chicago.

Pamphlet No. 58, "Standards of the National Board of Fire Underwriters for the Design, Installation and Construction of Containers and Pertinent Equipment for the Storage and Handling of Liquefied Petroleum Gases" can be obtained from the NBFU by writing to them at 222 West Adams St., Chicago. It should be helpful to you.—Ed.

•

**IOWA**

**We have a 28x44 Oliver tractor that has a 4¾ bore and 6¼ stroke that we want to convert to propane. Could you advise us where we could get the manifold and carburetor and how much to plane the head? It has standard pistons now.**

C.W.H.

We can answer your questions best by quoting from our *Butane-Propane Power Manual* as follows:

"The factory builds Models 77 and 88 with L. P. gas equipment. Field conversion kits are available at Oliver agencies for both of these models. They include Century carburetion, fuel tank, manifold separator, and the necessary connecting parts. Standard high compression ratio (6.75:1) is used.

All four of the Oliver engines are built with two optional compression ratios, one for gasoline, and the other for kerosene-distillate fuel. In making conversions with other than Oliver factory equipment, the high compression equipment should be used and the manifolds separated."—Ed.

•

**MISSOURI**

**Would it be practical to use a vapor pump on a twin tank delivery truck for filling customer bulk tanks?**

**My idea would be to draw vapor from one tank to build up pressure in the tank you are withdrawing from while using the vapor return from the customer tank to the tank you are withdrawing vapor from.**

**Do you know of any companies that make vapor pumps for this purpose?**

G.D.

It is possible to use a vapor pump to transfer L. P. gas from a twin tank delivery truck to customer tanks in the manner which you describe. However, we do not see the advantage of using the second of your twin tanks on the truck. Why not draw vapors direct from the customer tank to the vapor pump and pump it directly into the tank from which the liquid is being transferred to the customer tank?

Some problems may be encountered in determining the quantity of fuel which is delivered to the customer's storage since it is not practical to use a liquid meter with a vapor pump. Also, since some vapor is removed from the customer's storage, over and above that displaced by liquid, the customer will generally be given short measure.

We do not know of any companies who manufacture a vapor pump for delivery trucks, although any of the leading vapor pumps can be adapted to truck operation. It will require some field engineering and special mounting to make a satisfactory installation. Companies which manufacture vapor pumps which can be adapted to your use are:

Brunner Manufacturing Co.; Corken's Inc.; Ingersoll Rand Co.; Roney, Inc.

You do not advise us of the difficulties you are encountering with liquid pumps. We therefore are at a loss in giving any direct help regarding them. There are thousands of pumps installed on L. P. gas delivery trucks which are giving satisfactory service. Most of the recent models are fitted with dry type mechanical seals around the shafts. These mechanical seals have greatly reduced complaints about packing gland leakage. Also pumps are sometimes blamed for troubles which are not the fault of the pump. Some of these troubles may be traced to restricted inlet or discharge flow caused by undersized piping, valves, strainers, excessive number of pipe fittings and turns, insufficient head and pockets. Insufficient head, restrictions, and similar conditions may cause vapor lock which will in turn cause a reduction in pump capacity, excessive pump wear and generally unsatisfactory service.—Ed.

Stanolind
LP
GAS
28 PLANTS . .
7 STATES .
20 YEARS PRODUCTION
"KNOW HOW"...
55 REASONS TO CALL, WRITE
OR WIRE . . .
STANOLIND
Oil and Gas Company
LP GAS SALES SECTION
P. O. BOX 591, TULSA, OKLA
-SURE!

SAFETY always is—or should be—the first consideration in every activity in the LPG industry. Customer installations and service, fuel transfer, bulk plant and tank truck operation—all require the most earnest attention to safety precautions on the part of a dealer's employes.

The prosperity and, in fact, the very existence of a dealer rests upon his reputation. This refers not only to integrity but to his safety record, as well. Let a dealer have several accidents and see the resistance to new sales that develops!

There are two prime causes of accidents—ignorance and carelessness, of which the latter is more serious. Lack of knowledge can soon be met through study and earnest endeavor, but carelessness is something of a trait of character. It takes hard, constructive effort to overcome it — and a good deal of supervision and prodding by the boss!

The subject of safety is constantly emphasized in these pages. Our bulk plant series is predicated upon this subject and this month there is an additional feature explaining how to be safe in tank truck operation.

Never pass up reading a safety article. Your bread and butter—maybe your personal welfare — depends upon how much stress you and your men lay upon this vital subject.

•

From a Sept. 29 Richmond, Va., paper:

The City Department of Public Utilities opened an elaborate display at the Atlantic Rural Exposition today. It was designed to show the advantages of natural gas.

Stoves, refrigerators, freezers—all were running smoothly.

There was just one sour note:

The city's natural gas lines do not reach Strawberry Hill. Everything was running on bottled gas.

•

Figures sometimes startle us into a realization of the passing scene as nothing else will. Manager Edward Lipman, of the New Jersey LPGA, recently published some quotable figures that may explain why you have to keep your name before the public and eternally sell if you want to keep up with competition.

Just since 1940 (a mere yesterday for some of us):

13½ million customers died.

Over 30 million customers have been born.

Over 17 million customers have been married.

Over ⅓ of all present families have been formed.

Almost ⅔ of our 150 million people do not remember World War I.

Over ½ of the people do not remember a Republican administration.

Your customers' tax bill has almost trebled.

Very desirable new products compete for your customer's dollar.

By Ed.

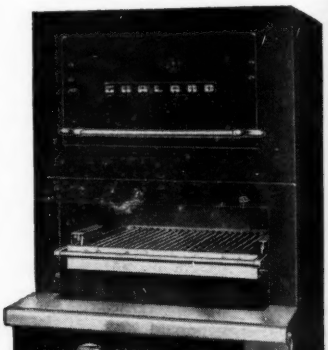
# ONLY GARLAND BROILERS

## *offer these 3 exclusive features*

**1** **GRID LEVER** is located out of heat zone; heavy spring counter balance raises or lowers grid at slightest pressure. Seven positions.

**2** **BROILING GRID** is mounted on ball bearing carriage for finger-tip control, rolls in or out at a touch. "Floating" grid rods prevent warping.

**3** **INFRA-AMIC SIDE FIRING.** Separately controlled burners shoot flame across a specially designed ceramic area, which radiates heat downward providing maximum intensity, uniformity.




Garland features mean greater sales volume . . . greater profit possibilities for you! So sell the line more people are sold on—Garland, the line of the leader!

***All Garland units can be furnished in stainless steel and equipped for use with manufactured, natural or L-P gases.***

GARLAND

DM PRODUCTS

*Heavy Duty Ranges • Restaurant Ranges • Broilers • Deep Fat Fryers • Griddles Broiler-Griddles • Baking and Roasting Ovens • Counter Griddles • Dinette Ranges*

**DETROIT-MICHIGAN STOVE CO., DETROIT 31, MICHIGAN**

**In Canada, GARLAND-BLODGETT, LTD., 2256 Eglinton Ave. W., TORONTO**

NEW ENGLAND dealers and distributors are feeling justifiable concern over the increasing demand for propane for domestic heating.

There is a very considerable group of conservatives who confine their installations to domestic cooking, water heating, and refrigeration—uses which provide a balanced winter-summer load. This might be the practical viewpoint if all industry men followed the same policy.

But there are always a few who do not subscribe to the doctrine of the "limited economy." They want volume, and take steps to get it. Depending upon your viewpoint, these more aggressive operators are radical, independent, or progressive.

House heating with propane is coming into New England in heavier volume every year. Many of the more conservative dealers have compromised to the extent of supplying fuel for spot heaters, and the volume of floor furnaces and central heating plants that are appearing in homes in the Yankee states is amazing in spite of the fact that propane heat is expensive. But it is also convenient, and a great many people are willing to pay the price for convenience.

Few customers really enjoy spending the winter shoveling coal and carrying out ashes, and not too many like the inevitable housecleaning, redecoration, and cleaning of curtains and drapes that must follow a season of smoke, dust, and grime from heating equipment fired with coal, wood, or oil.

The advent of natural gas into the utility-served centers of population in New England will inevitably result in a great increase in domestic heating with gas. Just as inevitably, the folks beyond the mains will demand the comfort and cleanliness of gas heat, and there will be hardy souls who will be willing to supply city conveniences to country customers.

Experience shows that wherever heating is added to the domestic load it becomes economically necessary to go into bulk distribution, as heating with bottled gas is usually too costly to be maintained on a competitive basis.

Many dealers in New England states are already selling in bulk to the larger users and proving they can compete with coal and

oil when all the factors are considered.

Looking all of these considerations in the eye, it seems apparent that the New England problem is changing from "how to block house heating" to "how to handle house heating."

•

Some criticism has come our way from the North Atlantic and New England states because we have devoted much space and energy to the promotion of carburetion.

We would be the first to agree that there is little opportunity for carburetion to pay its way in that region on account of the high local cost of L. P. gas, and the limited number of tractors up there which operate enough hours during the year to justify the conversion cost. But we invite all dealers who feel in similar manner to consider the following facts:

The total winter demand for LPG is crowding the present production, transportation and storage facilities of the entire industry, and the demand for more gas heating is increasing everywhere—even in New England.

Installation of new production facilities is becoming increasingly expensive. If the producers were to increase capacity just to meet a short winter demand, they could not go on selling fuel at the present price. The only way that the investment in new production facilities can be justified is to keep them operating on a year-round basis. This is also the only way to keep the fuel price at a low level.

Balanced year-round consumption is the one means by which we can secure an adequate supply of fuel at minimum cost throughout the nation.

The Midwestern and Southwestern producers are feeling this need for balanced year-round consumption more severly than those of any other region, and the New England dealers are dependent on those remote producers for a large share of the fuel coming into their states. The enlargement of the Midwestern and Southwestern production facilities is becoming terrifically important to dealers everywhere.

Dealers in the corn belt, the wheat belt, and all over the Southwest, South, and West, must sell a great deal more tractor carburetion if the dealers in Yankeeland are to continue receiving enough gas at competitive prices to keep their customers supplied with cooking fuel and hot bath water.

We take considerable pride in the fact that throughout the life of this publication we have consistently carried the torch for L. P. gas carburetion.

•

Bill Timmings, of Cities Fuel Corp., Fresno, Calif., risked offending the Women's Auxiliary of the Fresno Chamber of Commerce, and possibly all their husbands, by refusing to sell them gas. They wanted 100 toy balloons inflated for a party. One cigarette against the stretched epidermis of one of those toys, and it would have been quite a party!

*Carl Abell*

# Good Design

# Makes Tank Trucks Safer

By R. T. BLADES, F. J. HELLER and GEO. R. BENZ
Phillips Petroleum Co., Bartlesville, Oklahoma

MOST liquefied petroleum gas tank truck owners want a that is safe for ordinary daily operations and also one that is safe in case of an accident. As most of you know, L. P. gas tank trucks are subject to regulations issued by the Interstate Commerce Commission and by the various states, as well. Most of these regulations parallel the standards of the National Fire Protection Assn. Pamphlet No. 58. It is not the intention of this article to discuss all of the various requiremens, but rather to make comments concerning certain design features essential or desirable for safe L. P. gas tank truck operation. Some of these features are required by law, and all are considered good practice.

*Tank Mounting.* One of the first things to be considered for safe operation is the manner of mounting the L. P. gas tank on the truck chassis. This requires adequate lugs and bolting to hold the tank in its proper position.

*Surge Plates.* The proper installation of surge plates inside the LPG tank provides another important safety feature. The purpose of these plates is to prevent the liquid from surging forward during sudden stops. This feature is very important since the force of impact at the forward end of the tank may be of such magnitude as to break the mounting lugs loose from the tank. This could, of course, result in even more serious damage by

---

**This is the third article appearing recently in BUTANE-PROPANE NEWS by Phillips Petroleum Co. engineers upon important subjects concerning the LPG industry.**

**In August, Geo. R. Benz and R. E. Southwick discussed, "Foundations nad Suports for LPG Storage Tanks." The October issue enumerated four chief objectives to attain in, "Piping for LPG Bulk Plants." This was by R. T. Blades, F. J. Heller and Geo. R. Benz, who also authored the accompanying suggestions covering design features that are essential for safe tank truck operation.**

**These articles tie in closely with the current Bulk Plant Series, by Carl Abell, and will give readers a good library of information upon these subjects.—Editor.**

breaking or damaging the piping connections. Fig. 1 shows a tank truck in uniform motion; Fig. 2 shows how the liquid will surge forward as a result of a sudden stop, and Fig. 3 shows how surge plates will prevent such surges.

*Protection of Appurtenances.* The truck unloading pump and meter should be located and protected so as to prevent any damage that could possibly result in the event of an accident.

The relief valve connection of the tank sould be well protected against mishap. Damage to this connection could be extremely serious since it is never equipped with an excess flow valve. This connection should therefore be located or protected in such manner that it cannot be accidentally broken off.

The bottom outlet of the L. P. gas tank should be especially protected, since this connection, if provided, is the liquid outlet and is full of LPG at all times. It is imperative that this outlet connection be protected so that the tank will not be emptied in case the liquid piping is ruptured. Experience has shown that the usual excess flow valves are satisfactory for the protection of this and other tank connections; however, improved type valves for use in the bottom outlet connection are now available. One of these is the "Safetiflo" internal valve. (See Fig. 5).

*Safetiflo Valve.* The Safetiflo valve is unique in its characteristic of remaining closed at all times, except when the truck unloading pump is operating. This eliminates the need for the driver to open the liquid outlet valve manually at each point of delivery, and to close it again before leaving.

The "Safetiflo" valve opens and closes automatically by means of a pilot or pressure connection from the discharge side of the unloading pump to the diaphragm chamber in the valve. When the pump is operating and building up pressure, this pilot connection causes the diaphragm to move and thereby to hold the valve open. As soon as the

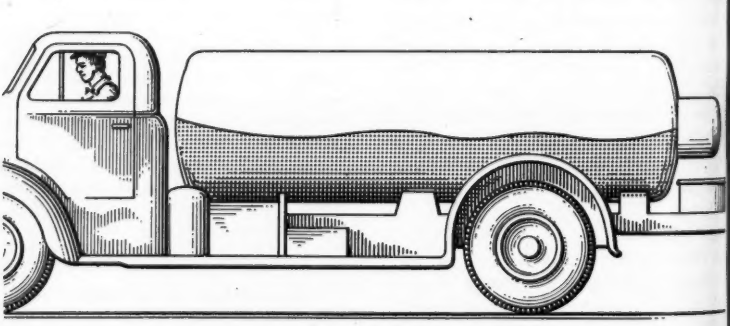


Fig. 1. Tank truck in uniform motion. Liquid at rest.

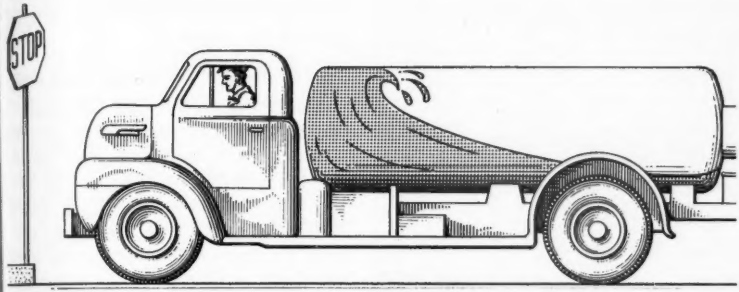



Fig. 2. Tank truck making a sudden stop. Note how liquid cargo shifts in the absence of proper surge plates in the tank.

pressure in the pump delivery line drops, the valve closes automatically. This will ordinarily occur when the pump is intentionally shut off, but will also take place if the delivery line should break or if, for any other reason, the pressure in the delivery line should approach the tank pressure. Under these conditions, the valve acts like an excess flow valve; during filling operations, the "Safetiflo" valve acts as a back flow check valve.

From the foregoing description, it is apparent that the "Safetiflo" valve is always closed when the truck is in transit and subject to a possible mishap. For this reason, this valve is superior to an excess flow valve. Under the same conditions, the excess flow valve is always open, and requires flow of L. P. gas through the valve following a piping failure to close.

The body of the "Safetiflo" valve is cast steel, and is screwed directly

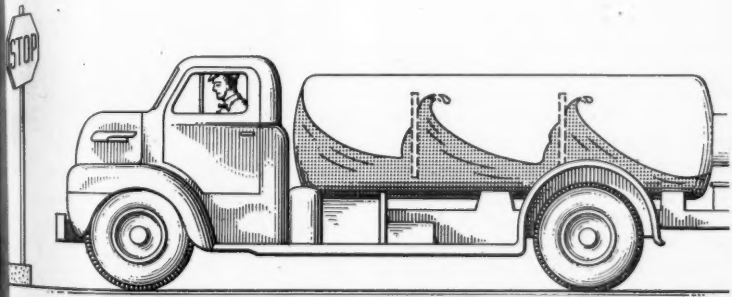



Fig. 3. Tank truck making a sudden stop. Note how surge plates break up surge.

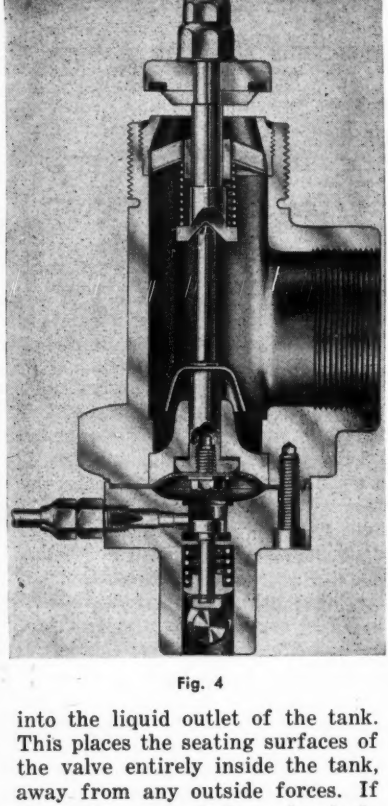


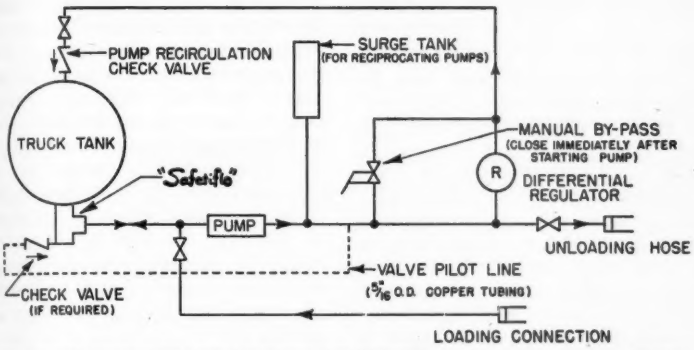
Fig. 4

into the liquid outlet of the tank. This places the seating surfaces of the valve entirely inside the tank, away from any outside forces. If the main part of the valve body should be subjected to a heavy blow, the body will break at a weakness groove located at the surface of the tank connection, and the valve will be held closed by a stainless steel spring. The outer portion of the valve stem (which is made in two pieces) will fall away with the main part of the valve body, and will not hinder the closing of the valve. This detail of construction is shown in Fig. 4.

**When Manual Operation Required**

A general view of the "Safetiflo" valve, showing the square on the priming cam is given in Fig. 5. When the valve is initially put into operation, or whenever the liquid line is empty, the priming cam must be operated manually to open the valve and thus to fill the pump and its piping. Once the liquid system is filled the "Safetiflo" will operate automatically without further attention. A schematic draw-

Fig. 5




This schematic drawing shows a typical installation of the "Safetiflo" on an LP-Gas delivery truck. The pilot line from the discharge side of the pump to the valve is shown by the dotted line. Where a reciprocating pump is used, a check valve must be installed in the pilot line. In the event of accident, pressure on the pilot side of the diaphragm bleeds through an orifice in the diaphragm and diaphragm stem, allowing the valve to close. Note that the "Safetiflo" is also used in filling the tank, and in this operation it acts as a simple check valve.

Fig. 6

ing of the installation of a "Safetiflo" valve is shown in Fig. 6.

*Reflective Painting.* The fact that the vapor pressure of L. P. gas in a truck tank rises with the temperature is well known. On very hot days the heat absorption through the tank wall and the consequent pressure rise may be of sufficient magnitude to cause the relief valve to open with the loss of some gas. This possibility may be reduced by painting the tank white. White paint is highly reflective and will materially reduce the amount of heat entering the tank. Properly maintained white paint has been proven to be even more effective than aluminum paint, and its use is strongly recommended.

*Ignition Cut-Off.* An automatic ignition cut-off switch is a simple safety device which is highly desirable for all L. P. gas trucks except those that use the truck engine for unloading. It is a reliable means of eliminating broken hoses and damaged piping caused by the truck being inadvertently driven away before its hoses are disconnected. This device consists of an automatic, door-operated, explosion-proof switch in the truck ignition circuit mounted to open when the door covering the tank connections is opened. Thus the truck cannot be started until the hoses are disconnected and the door over the tank connections is closed.

*Separate Fuel Tank.* Some trucks which use L. P. gas as the motor fuel take fuel directly from the cargo tank. For safer operation it is recommended that a separate tank be used exclusively for motor fuel. This reduces the number of open-

ings in the main cargo tank, and reduces the length of connections from the fuel tank to the engine.

*Static Electricity.* The once familiar drag-chain which dangled at the rear of every gasoline and L. P. gas truck is no longer required by the ICC. It was thought for many years that a drag-chain was essential to disperse the static electricity which accumulated on the body of the tank truck, but this has been completely disproved. A bonding cable between the tank truck and the customer's pipe into which it discharges or the pipe from which it is filled will provide a much better method of eliminating danger from accumulated static electricity. Some states may still require the drag-chain even though the ICC no longer makes this requirement.

*Required Marking.* The ICC requires that all L. P. gas trucks be marked in accordance with its rules. The words "Flammable Compressed Gas" must appear in letters at least six inches high on each side and rear of the tank. The owner's name and the name of the product, such as "Propane," "Butane," or "Liquefied Petroleum Gas" must also appear in letters at least two inches high. A trademark may be placed on the tank, provided it does not make the required markings inconspicuous. A photograph of a truck which is properly marked is shown in Fig. 7.

*Tank Codes.* The ICC also requires that all L. P. gas truck tanks be constructed in accordance with the API-ASME Code or the 1950 ASME Code, and that they be re-tested at certain intervals.

Failure to comply with the ICC requirements (and others) is an offense against practical safety

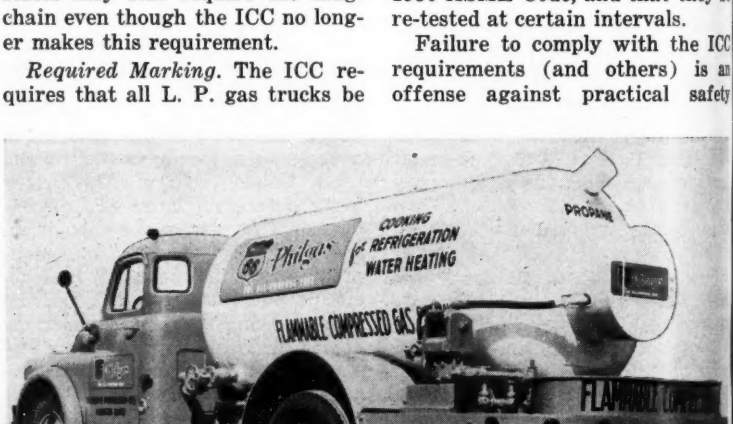



Fig. 7

rules which are designed to protect both the public and the operator. Such failure could result in serious consequences for the truck owner.

It is hoped that the features discussed in this article and summarized below will be of assistance in promoting safer L. P. gas tank truck operation.

**A. Comply with all Federal, State, and local regulations.**

**B. Be sure that the tank is firmly secured to the chassis.**

**C. Be sure surge plates are included**

**D. Protect pump, meter, bottom outlet, and the relief valve connection.**

**E. Use an automatic ignition cutoff.**

**F. Employ a separate tank for motor fuel.**

**G. Use a bonding cable to disperse static electricity.**

**H. Mark the truck and tank as required by regulations.**

**I. Be sure tank is constructed according to ASME code.**

These features should help make for a safe L. P. gas truck; a safe truck and a safe driver are the answer to safe operations.

## Propane Fuels Beacon Light For Military Needs

A military beacon lamp that produces infra-red light with bottled gas has been developed by Armour Research Foundation of Illinois Institute of Technology, according to a special release of the Chicago Journal of Commerce.

Designed to replace a heavier lamp that uses storage batteries for power, it is lighter, just as bright and promises to be cheaper than its predecessor. As an added feature, it will operate in the tropics or minus 65 degree climes.

Infra-red lamps emit light invisible to the naked eye and can be seen only through special viewing devices.

### Gasoline Failed

Original army specifications called for a gasoline-powered lamp, but J. Scott Griffith, Foundation supervisor of minerals research, said gasoline fails to ignite readily at temperatures of 25 degrees below zero or less.

Utilizing the familiar gasoline camping lantern as a starting point in their research, Foundation scientists had to overcome three obstacles —finding a new fuel, a new mantle, and a new method of ignition—to devise a lamp that would fill the bill.

Fuel and weight problems were licked by replacing electric lamps and storage batteries with mantles and midget tanks of propane-ethane.

Mantles of knitted rayon mesh impregnated with salts of chrominum and aluminum were found to produce the desired amount of infra-red light. When dried and lighted, the rayon burns, leaving only the oxide deposit in the familiar form of a mantle.

The new mantle, adapted by Leon Atlas and Gerald Keitel, Foundation staff members, produces as much infra-red light as an 85-watt electrically powered lamp when the proper filter is used (filters blackout visible light rays).

Obviously, the enemy could see the G. I. light the lamp with a match. A simple flint lighter inside the lamp turned the trick. The spark, of course, is blotted out by the filter. In fact, the operation is so invisible one must open a small peephole on top of the lamp to see if it is burning.

The new lamp is a beacon light used to mark assembly points and road blocks in contrast to general area lighting.

# 20,000 Prospects Signed at Mid-South Fair

THE Tennessee Liquefied Petroleum Gas Assn. did an outstanding promotional job for the industry by conducting an L. P. gas trade show in connection with a "Mid-South Fair" which was held in Memphis in September. Planned as a means of combatting the encroachments of electricity into the rural homes and farms for uses for which propane gas is superior, the trade show was participated in by all segments of the industry, including the association members, the manufacturers and distributors of appliances and equipment, and several of the leading gas producers.

The trade show was housed in a separate tent within the fair grounds, and included displays set up and manned by manufacturers and distributors of domestic appliances, heating equipment, tanks, carburetors, and other farm units utilizing propane.

A total of 30,089 visitors passed through the tent during the fair. More than 20,000 signed the registration cards which entitled them to compete in the drawing for the grand prize, a television set, which was given away on the closing night of the fair. The winner was Mrs. Tommy Brunton, of Braggadocia, Mo.

The registration cards gave the names and addresses of the visitors, and the vital information on the kind of fuel that each used for cooking and heating—L. P. gas, natural gas, electricity, coal, or other fuel. After the fair, the cards were sorted and delivered to the dealers serving the territory in which the registrants lived.

Every visitor to the trade show was given an attractive folder pointing out the safety, dependability, and economy of L. P. gas as a domestic fuel, and for the numerous farm uses, with special emphasis on the points in which propane excels electricity. The production of this fine piece of promotional literature was made possible by contributions from Anchor Petroleum Co., Beacon Petroleum Co., Phillips Petroleum Co., Sinclair Oil

T. G. Tackett standing by National Butane Gas Co.'s booth.

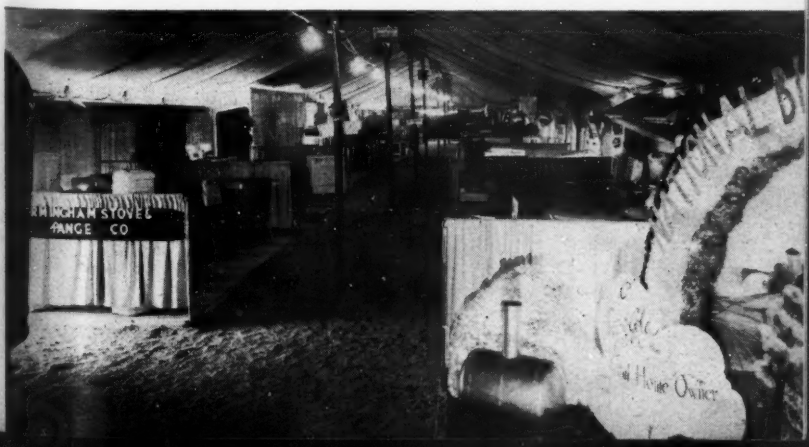
Jim Jones and W. G. Petty in front of map of Mid-South, the area covered by the show.

and Refining Co., and Warren Petroleum Co.

One of the features which contributed to the success of the show was the work of Duke Sweeney, broadcaster for Station WMC, who sent out frequent announcements promoting attendance at the Mid-South Fair and the Trade Show, and calling attention to the advantages of L. P. gas. The highlight of his work was his personal appearances on television Station WMCT with similar promotional work.

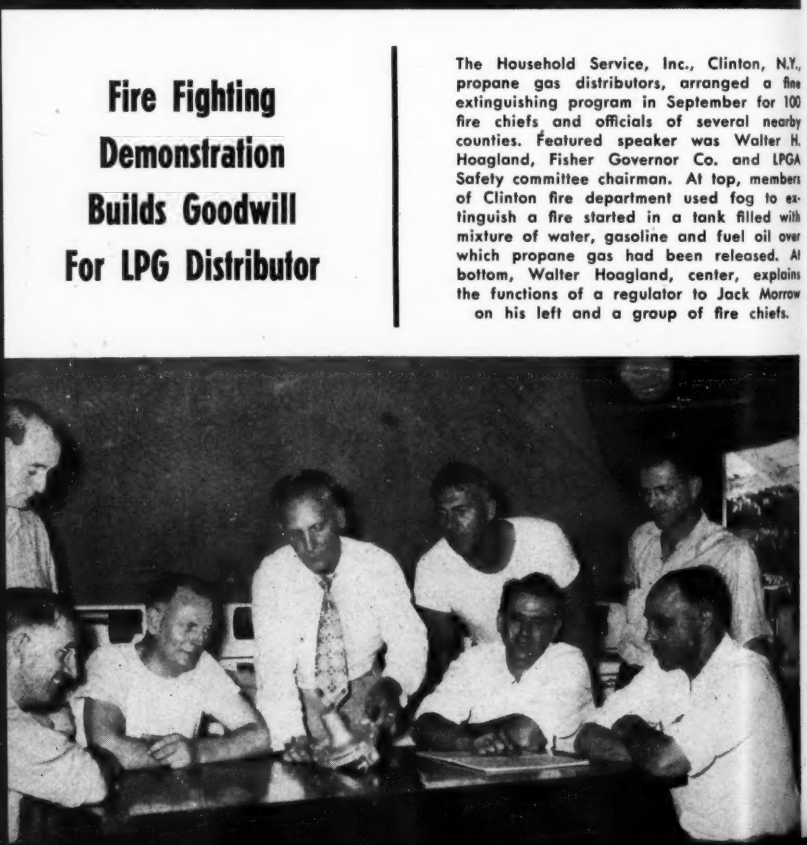
According to Jim S. Jones, president of the Tennessee LPGA, the results of this trade show have been so outstanding that the association hopes to repeat the event next year, taking advantage of the lessons learned in the past show to make it an event more effective means of combatting Reddy Kilowatt competition.

End-to-end view of exhibit tent. It was 180 ft. long by 30 ft. wide.



# Fire Fighting Demonstration Builds Goodwill For LPG Distributor

The Household Service, Inc., Clinton, N.Y., propane gas distributors, arranged a fine extinguishing program in September for 100 fire chiefs and officials of several nearby counties. Featured speaker was Walter H. Hoagland, Fisher Governor Co. and LPGA Safety committee chairman. At top, members of Clinton fire department used fog to extinguish a fire started in a tank filled with mixture of water, gasoline and fuel oil over which propane gas had been released. At bottom, Walter Hoagland, center, explains the functions of a regulator to Jack Morrow on his left and a group of fire chiefs.



# Storage Capacity Not Adequate To Meet Peak Demand In Winter

By H. R. THOMAS

LPG Sales Superintendent, Stanolind Oil and Gas Co., Tulsa, Oklahoma

THE product supply problem is always with us in the young and growing L. P. gas industry. Supply has become increasingly important as the industry has grown to one of major size since the end of World War II.

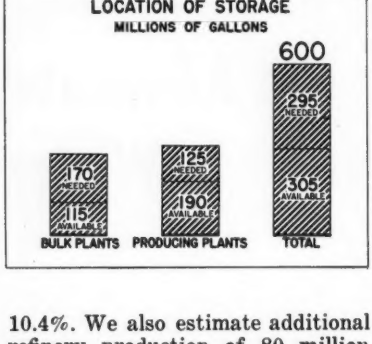
H. R. THOMAS

There is no over-all shortage of L. P. gas. Those winter periods of peak demand when LPG has not been available in some areas have always been preceded by summer periods of slack demand when more product was injected into formations or residue gas lines, or flared, than was needed in the peak demand period to relieve the seasonal shortages. There are also some areas in which local production is adequate during the summer season, but which require additional product during winter peak periods; in some such cases the product brought in from more distant points has added transportation charges, resulting in a higher delivered cost than product normally supplied by local plants.

Last year an estimated 4.1 billion gallons of LPG were marketed, excluding product used in motor gasoline, aviation fuel or synthetic rubber manufacture. U. S. Bureau of Mines production statistics show 4.25 billion gallons of production in 1951; and these figures do not reflect large volumes produced at and utilized in refineries. Although accurate statistics are not available, it is estimated that roughly 720 million gallons of L. P. gas were injected into formations or residue gas lines, or flared during the summer of 1951.

This year LPG sales will be about 5 billion gallons, and if the usual 20% to 25% increase in annual volumes continues, will be about 6 billion gallons in 1953.

A recent survey of natural gasoline and cycling plants indicates an increase of 6.6% in total productive capacity of light hydrocarbons. We estimate that this represents 350 million gallons increase in LPG capacity in 1952 over 1951, or about




10.4%. We also estimate additional refinery production of 80 million gallons, or a total of 430 million gallons of new production this year available to the L. P. gas industry. This will not take care of the expected increase in demand. Therefore, it is evident that if total demand is 5 billion gallons this year and 6 billion next year, much of the production usually injected or flared must be stored for winter consumption to supply the peak demand.

### Cold Weather the Bug-a-Boo

Winter weather — which cannot be predicted far in advance to any degree of accuracy—has a direct bearing on demand each year. Winter shortages generally occur in areas where the weather is abnormally cold and consumption outstrips current production, available storage capacity, and transportation movements of product.

According to published figures, last winter, nationwide, was 1.3% warmer than normal. If the coming winter is normal or colder than normal—the extent and severity of shortages is anyone's guess. We all know that those dealers with a good storage program will be in a position to give the best service to retail customers. Although this problem of winter shortages has been with us a long time, it can be solved and in many instances has been solved. The predominant factors are storage and delivery ratios. As long as our industry continues to grow, it will be necessary to add to storage capacity at all levels and improve on delivery ratios.

Much has been said about the very important need for adequate consumer storage. This type of storage is most essential—the proper amount of storage capacity must exist at the point of consumption, or we shall all continue to be plagued with costly special deliveries, dissatisfied customers, endless headaches, and all of the inherent difficulties with which you are all familiar. One-half of consumer fuel requirements stored in advance for house heating is recommended.

The capacity for storing L. P. gas at the producing plants and dealer bulk plants has been estimated in Table 1.

TABLE 1

| Storage | Gallons | Day's Supply* |
|---|---|---|
| Producing Plants | 190,000,000 | 12 |
| Bulk Plants | 115,000,000 | 8 |
| Total | 305,000,000 | 20 |

* Based on winter peak demand of 1951.

Increasing the storage capacity at the production point over the ability of the bulk plants to receive

**TABLE 2. UNEVEN SHIPMENTS AS THEY APPLY TO TANK CAR COSTS**

Based on Shipping 1,000,000 Gallons a Year

| Shipping Ratio W - S | Gallons | | (*)Tank Cars Required | | Idle Tank Cars | (**)Cost Of Idle Tank Cars |
|---|---|---|---|---|---|---|
| | Winter | Summer | Winter | Summer | Summer | |
| 1 - 1 | 500,000 | 500,000 | 5.0 | 5.0 | 0 | 0 |
| 1.25 - 1 | 560,000 | 440,000 | 5.6 | 4.4 | 1.2 | $ 900.00 |
| 1.5 - 1 | 600,000 | 400,000 | 6.0 | 4.0 | 2.0 | $1500.00 |
| 1.75 - 1 | 636,600 | 363,400 | 6.4 | 3.6 | 2.8 | $2100.00 |
| 2 - 1 | 666,700 | 333,300 | 6.7 | 3.3 | 3.4 | $2550.00 |

(*) Based on 1 car moving 200,000 gallons per year.
(**)Based on $125 per month tank car rental.

continuous shipments of LPG is not logical nor profitable. One of the costs of uneven shipments can be illustrated somewhat by the examples in Table 2.

The cost of idle tank cars in the summer needed for the movement of the extra volume required in the winter amounts to almost a penny a gallon—three-quarters of one cent to be exact.

What should the storage program goal for next year be to meet the demands of six billion gallons? The production of L. P. gas is continuous from day to day, and from season to season. It cannot be stepped up very much to meet the increased demand of peak periods. Therefore, if L. P. gas is produced evenly and delivered, let's suppose, to the consumer on a 1½ to 1 ratio, we need storage for a minimum of 600 million gallons at the dealer and producer levels in 1953. We believe this amount of storage is needed over and above the amount of storage located on the consumer's premises in order to provide a continuous flow of LPG from the producing plants to the point of ultimate consumption. We believe 1½ to 1 ratio of deliveries to dealers and consumers is the absolute maximum that should be in use, but from our observations we believe the majority of well operated LPG businesses are on a 1 to 1 ratio of dealer-con-

**L-P GAS SALES**

| YEAR | BILLIONS OF GALLONS | INCREASE OVER PREVIOUS YEAR |
|---|---|---|
| 1950 | 3.2 | 22.4% |
| 1951 | 4.1 | 25.9% |
| 1952 | 5 | 22 % |
| 1953 | 6 | 20 % |

**HEATING SEASON—DEGREE DAYS**

| NORMAL | 1950-51 | 1951-52 |
|---|---|---|
| 175,000 | 172,000 | 173,000 |
| | -1.8% | -1.3% |

**1953 SUPPLY AND DEMAND**
AT 1½ TO 1 (WINTER TO SUMMER)
BILLIONS OF GALLONS

| | PRODUCTION | | DELIVERY TO CUSTOMER | | |
|---|---|---|---|---|---|
| WINTER | 3 | | 3.6 | | |
| SUMMER | 3 | MINUS | 2.4 | = | .6 OR 600 MILLION GALLONS STORAGE NEEDED |
| | 6 | | 6 | | |

sumer deliveries or rapidly working toward this ratio.

Let's look at some figures on Chart I, II, and III, assuming sales reach six billion gallons next year.

### The Minimum Storage Needed

With a demand of six billion gallons in 1953, the dealer will deliver, on a 1½ to 1 basis mentioned above, to the consumer 3.6 billion gallons in the winter, or 600 million gallons per month, or 20 million gallons per day. Two hundred eighty-five million gallons of storage at the dealer level would represent a 14-day supply for the average winter monthly deliveries. This is the absolute minimum average storage needed by the industry at the dealer level. True, individual cases will vary, but if the dealer does not have at least 14 days' storage capacity for peak requirements, a safe margin of storage has not been provided.

Several companies have been putting in underground cavity storage located principally in producing areas. Estimates vary as to the available capacity. Our best estimates indicate 84 million gallons in use this year and 210 million gallons in 1953. Storage in the producing areas is being increased, but when the peak demand season hits, the best place to have L. P. gas is: First, at the point of consumption in the customer's tanks, and second as near to this point as possible—in dealer bulk tanks.

This discussion has covered 1953 because if sufficient storage capacity is to be available to meet the demand that can now be expected next year, planning and action must start now. Let's keep working and working hard on consumer ratios for the balanced load is needed, but let's not forget that the LPG industry sales grew by 22.4% in 1950 and 25.9% in 1951, in spite of the fact that in both years the heating season was warmer than normal—being 1.8% warmer than normal in 1950-51, and 1.3% warmer in 1951-52.

### Must Keep Up With Growth

The LPG industry is expanding rapidly. Over 50% more of it was sold in 1951 than two years ago and storage was a problem then as now. The industry is going to continue to grow and grow fast. Let's make sure that each individual operation from consumer to bulk plant back to the producer provides adequate storage to meet the demand.

The 1000-gal. propane storage tank which provides fuel for engines and all domestic services at the Stockwell gold mine near Trona, Calif.

# Propane Revolutionizes Operations At Calif. Gold Mine

By E. C. CLARKE

General Sales Manager, Suburban Gas Service, Upland, Calif.

NEW efficiency, greater convenience and lower cost were claimed as the results of conversion to propane gas by W. A. Fritz, the farseeing operator of the Stockwell gold mine, located four miles north of Trona, Calif. The three engines which currently supply power for the mine were converted to propane about six months ago, using the Garretson system of carburetion, supplied by Suburban Gas Service.

The engines include a 40 hp. 1925 Mack which drives an ore and rock crusher; a 15 hp. 1925 Fairbanks-Morse Model Z "one lunger" which turns a generating unit, and a 3½ hp. 1948 Fairbanks-Morse which powers an Onan light plant. Arrangements have been made to add a fourth power plant, a 140 hp. 1951 Chrysler, to operate the shaking table and other milling machinery.

Mr. Fritz declares that the most important consideration in support of the change was that of convenience. Previously, gasoline had to be stored in drums at a safe distance from the operational area, and carried to the engines when needed. Since none of the engines were equipped with fuel gauges, a constant check had to be kept on their tanks, lest they run out of fuel at

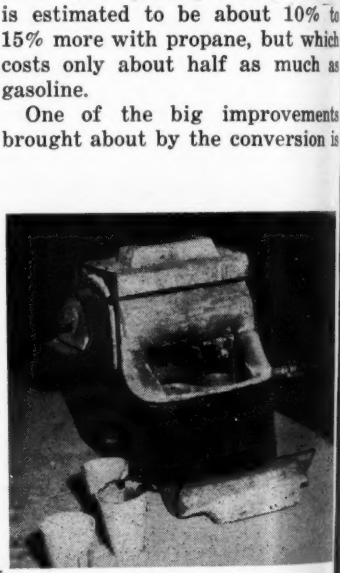
an inconvenient or inopportune time. The danger of fire and explosion was always present to some degree during fuel transfer because of the proximity of the gasoline vapors to the hot manifolds.

With the change to propane, a 1000-gallon storage tank was set up in a safe storage area, with pipelines running to each engine, on which the propane carburetors were installed. Shutoff valves permit individual maintenance without affecting the rest of the system. The central tank also supplies fuel for the assay furnace, and a Servel refrigerator, kitchen range, and heating in the bunkhouse and mess hall. No other heat or power is used, save that created by the propane powered generators. Fuel servicing is accomplished with the turn of a valve, allowing for maximum safety and almost no effort. Propane is no less available to the area than is gasoline or other combustion fuels.

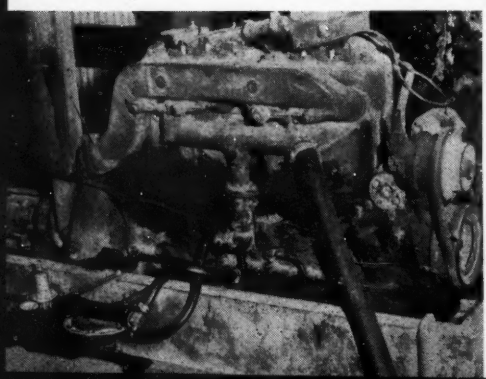
Mr. Fritz reports that his engines operate much more efficiently since changing to propane; the smaller engines run noticeably cooler; there is no carbon buildup, and the oil stays cleaner for a longer time. No breakdowns or stoppages have occurred since the changeover; no repairs have been required on any of the engines, and Mr. Fritz expects to triple the amount of engine operating hours between overhauls.

No accurate records are kept on the comparative consumption of fuel but it is considered safe to say that costs have been reduced by more than 40%; consumption by volume is estimated to be about 10% to 15% more with propane, but which costs only about half as much as gasoline.

One of the big improvements brought about by the conversion is



Assay furnace which utilizes propane for fuel at California gold mine.



One of the three propane-burning engines which supplies power for various mine operations.

in the operation of the assay furnace, which is required to furnish 1500° F for about 24 hours a week. Under the old method it was fueled by gasoline fed to burners at 60 lbs. pressure to produce the correct amount of heat. If the pressure went down, the furnace would go out. Since the propane burner was installed, the heat has been faster, more intense, and more easily controlled. The danger of high pressure leaks has been eliminated, and the whole operation of the furnace has been smoother and safer.

The changeover of all the equipment was accomplished by Don Hamilton, Curly Stuttner, and Jack Carson, carburetion specialists for Suburban Gas Service at Ridgecrest, Calif.

Mr. Fritz asserts that he would not go back to the old source of heat and power for anything in the world. He now has all of his equipment, including the living facilities, operating more efficiently and economically from one convenient central supply of L. P. gas with a greatly reduced fire hazard.

## Unique Xmas Card Brought New Business Throughout '52

An unusual Christmas card in modern-day retailing got record results last year in attracting new customers and boosting sales to those already on the books for the J. A. Ossen Company, Denver, Colorado.

Well aware of the advantage of real "surprise value" in Christmas cards, J. A. Ossen, head of the firm, utilized a holiday greeting containing an undeveloped photographic print. The card was designed in French-folder style, with a "cheesecake" photograph of a young girl entering a darkroom on the cover. Carrying a camera, the model was shown adjusting a garter, while the caption below stated, "Let's See What Develops." Opening the folder, the recipient found only a plain, white 2¼x3¼ sheet of photographic print paper enclosed. Printed in one corner were instructions to dip this into ordinary water, whereupon a picture would develop.

The print, when subjected to a bath of water, materialized a photograph of Mr. Ossen and his employes behind the counter of the store, smiling and extending their hands. A Christmas tree made up the background, and written on the bottom of the photograph was "Holiday Greetings from the J. A. Olsen Co."

More than three-fourths of the 1000 persons who received the clever "Christmas card" visited the Denver store within the first two weeks after the New Year to express their appreciation, compliment the management on the cleverness of the idea, and to look over Ossen stocks. Sales volume climbed so rapidly that Mr. Ossen decided to utilize the card as the basis for a direct-mail program.

During all of 1952, the Ossen Co. has sent out monthly direct mail in the form of a 4-page, offset printed folder, under the title of "Hot Flashes." On the cover of each issue is the same sketch of the model entering the darkroom, which, of course, ties each successive mailing in with the initial Christmas card.

Net results have been an extremely high degree of readership on all direct-mail and an indication of the alert efficiency of the firm. A leading calendar company furnished the Denver store with the special photographic paper on which the undeveloped print could be mailed.

# Big Underground Storage Protects Winter Customers

T. C. Morrow, president

PLANNING for the security of its customers next winter and years following, the Enterprise Petroleum Gas Co., Inc., Mount Enterprise, Texas, is among the first distributors in the nation to follow several producers in providing large underground storage of liquefied petroleum gas.

The cavern was planned to hold approximately 1,250,000 gallons. Work was started on the well April 1, 1952, and completed July 12. The same day it was put in commercial operation by injecting into the well 50,000 gallons of L. P. gas. Filling was completed Sept. 16 and the actual capacity proved to be 1,264,000 gallons. This will later be increased to 2,000,000 gallons.

A second well is now being drilled and washed for a storage of 2,000,000 gallons more.

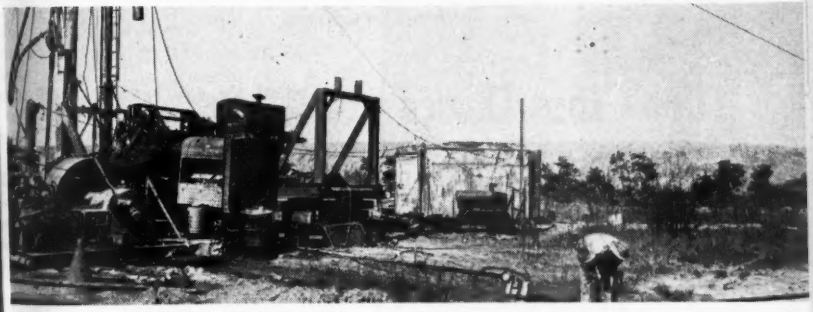
The estimated cost for the planned 4,000,000 gallons of LPG is $3.60 per barrel of capacity.

T. C. Morrow is president of the company drilling these wells, and associated with him is S. B. Evans who owns and operates the Economy Gas Co. at Converse, La.

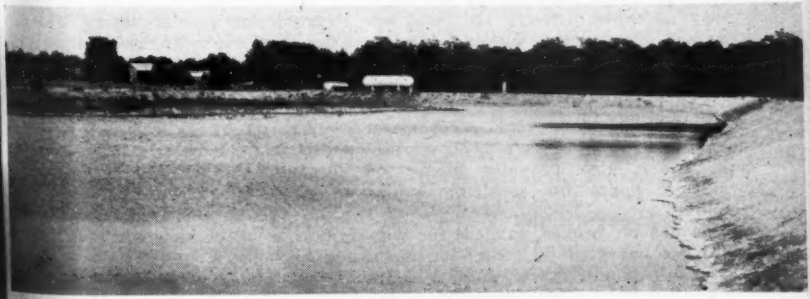
Mr. Morrow, who is but 33 years old, also has two other companies—the Mount Enterprise Automatic Gas Distributing Co., which sells only at wholesale, and the Mount Enterprise Automatic Gas Co., which retails LPG to 2700 customers. Floyd Morrow is general manager of the latter.

Part of company's transport fleet which handled LPG for storage. The transports were manufactured by Trinity Steel Co.

First load of LPG put into steel storage for pumping into ground.



The rig used to drill the first well put down for underground storage.



The salt brine pit made a sizable lake on company property.

Gas, Inc., Lowell, Mass., takes good advantage of its delivery tank truck to publicize the company's services.

# Don't Lose Chance To Advertise

DEALERS can derive a great deal of valuable, free advertising by using the sides of their trucks to tell the public of the services offered, says Lou Wenzel, vice president of Gas, Inc., Lowell, Mass.

His company now has on the highways a swank delivery unit that admirably serves this end, as the accompanying picture shows.

The truck is a 1950 Mack, 176-inch wheel base. Equipped with 2000 gallon water capacity tank, streamlined and skirted. It makes a good appearance and also provides plenty of storage space for servicing equipment.

It has air brakes, sanders for winter use operated by switch on dash. Piston pump-driven through V belts from power take-off (chain-driven too loud, would wake customers in early morning hours).

Top of the cab has spot light, operated on 360° rotation and elevation for night deliveries.

The truck carries 100 feet of hose, equipped with Selwyn-Landers fill nozzle and the hose is mounted on an electrically driven hose reel (12 volt motor).

A Neptune liquid meter provides printed delivery ticket, showing actual gallons delivered. Interior of rear compartment is lighted where meter and hose are located.

Mr. Wenzel redesigned the exhaust system for greater safety. The muffler is at right angles to chassis and located under front bumper. Safety is important because the engine is running when pumping.

All piping is extra heavy steel, electric welded joints to withstand vibrations and strains.

A flexible strap discharges static into the ground constantly, doesn't wear as much as chain, nor make as much noise.

The body was built by the Columbian Steel Tank Co., Kansas City, Mo., and just missed being lost in the 1952 spring floods.

# Getting LPG to Market

**Producers and Railroads Study Tank Car Shipments at NGAA Meeting**

HOW to balance an over-supply of liquefied petroleum gas in summer with an over-demand in winter was the subject of a joint conference of shippers of fuel and railroad traffic men held in Tulsa in late September. The meeting was sponsored by the Natural Gasoline Assn. of America to help solve and review rate, storage and transportation problems of producers and the railroads.

Large storage, above and underground, is helping to relieve some of the pressure. A better summer-winter balance would do more, the meeting was told. Increases in production continue, as do demands. It is expected 1952 production will be 8% to 10% above that of 1951, and even a greater increase is expected year to year for some time to come. Adequately meeting the problems of producers, the carriers and the consumers of LPG is a continuing responsibility.

Chairman of the meeting was Fred Shellhorn, vice president of Anchor Petroleum Co.; also chairman of the NGAA traffic committee. More than 150 men attended, among them traffic executives of 53 railroads of the United States, Canada and Mexico.

W. A. Baden, president of Anchor Petroleum Co., enumerated

W. A. BADEN

G. I. BRENNAN

many of the avenues through which improvement in service could be attained. Among these are:

A reduction in terminal delays. LPG shipments generally move an average of 950 miles against an average of 400 miles for other petroleum products. This helps to put shipping costs to where they often exceed by two or three times the manufactured cost of the fuel.

Further, Mr. Baden said, "On today's market this industry has an investment in railroad equipment of $198,000,000. Next year this figure will be increased to $201,000,000," he said.

"From no railroad transportation to the present 18,000 tank cars and 20,000 cars by next spring in slightly more than 20 years must

be recognized as a great stride in industrial expansion.

"There are 105,000 tank cars in all petroleum services, including petroleum-chemical, therefore our industry will now provide one-fifth of all petroleum railroad traffic.

"An important phase influencing the cost of delivering products is the number of trips per month or year a car will yield. While it is true that industry is not always 100% perfect in obtaining immediate loadings for empty cars nor releasing cars promptly at destination; nevertheless, the transit time and terminal delays to cars have the key to the situation.

**Keep Tank Cars Rolling**

"If we increase the use of cars from one trip to two trips per month the railroads have doubled their revenue. This may only be accomplished through individual efforts of the railroads to keep cars rolling in through trains, to coordinate and expedite the pick-up of cars at origins and above all to solve the detestable problem of interchange at large terminals. Whatever applies to handling the loaded cars applies with equal force to the return movement.

"We are approaching the peak shipping season. With normal production to ship from gasoline plants and refineries plus the surplus summer production held in underground and track storage, will pose an exciting and serious program of transportation."

G. L. Brennan, manager of the LPG division of Warren Petroleum Corp., after pointing out that the annual increased production of L. P. gas would in itself be a problem for the railroads, spoke of how underground storage of product, especially when located near the large markets, would be of value to all elements of the industry as well as to the railroads. In part he said, "Underground storage of liquefied petroleum gases is one of the most important L. P. gas developments that has taken place in many years.

"A fair and reasonable point of view by the railroads of in-transit charges can have an important influence to such a program."

Mr. Brennan predicted that markets for L. P. gas will continue to expand, depending on salesmanship and favorable economic conditions.

**Engine Use is Important**

"The increasing use of LPG in internal combustion engines is of great interest," he said, pointing to the use of this fuel in operating heavy duty equipment in oil fields, in operating buses, in farm tractors, and in the chemical industry.

Mr. Brennan also said competition with rail movement by trucks, pipe lines, and by water will depend to a large extent upon rail freight rates in certain areas.

Other principal speakers at the session were John F. Lynch, president, La Gloria Corp., Corpus Christi, and T. M. Caiazza, vice president, Santa Fe Railway. Frank Perry, vice president of Cities Service Oil Co., Bartlesville, and vice president of NGAA, made the welcoming address to the group.

Part 3

Bulk Plant Series

# Planning the Distributor-Dealer Bulk Plant

## Piping, Valves, and Hoses

By CARL ABELL

THE first consideration in planning and installing the piping in an L. P. gas bulk plant is to make everything safe. Secondly, everything must function efficiently and economically.

The necessary operations of putting fuel into storage, and transferring it from storage to delivery equipment or containers, consume time, and represent direct payroll cost. A plant which is slow in its fuel transfer operations suffers an unproductive expense which continues until the reasons for the slowness are corrected.

Let us consider a hypothetical bulk plant having an annual throughput of approximately one million gallons. The fuel goes out in bulk trucks having an average net capacity of one thousand gallons. Suppose that due to improper design of the piping system, which could be corrected at nominal cost, 15 minutes are lost each time a bulk truck is filled. Multiply that by 1000 loads per year, and it represents a loss of 250 man hours. At current wage scales, this is a waste of nearly $500. How many years can we allow this to go on?

A great many plants are struggling against just such a handicap and, in addition, are incurring increased electrical costs and needlessly high maintenance costs on motors and pumps, because of attempted economies in the installation of the plant, which included undersized piping, valves imposing undue restriction to flow, or complicated piping design between the tank and the pump.

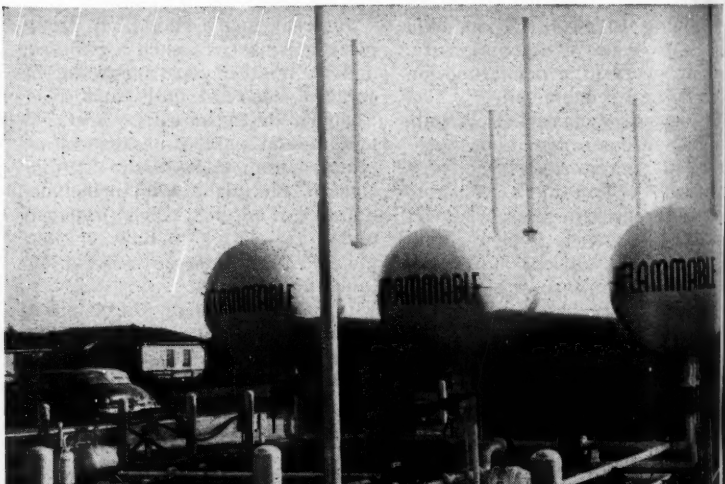
It is worth noting that none of these imperfections add to the safety of the plant, although in some cases poor design may contribute to accident hazards. For example, a vapor line that may accumulate pockets of condensed liquid may at some time cause the entrance of liquid fuel into the compressor. This will always cut the lubricant off the pistons and cylinders, causing excessive wear. If too much liquid gets into the compressor at

one time, it may even crack a cylinder or piston, and result in the escape of a considerable amount of gas, and the need for a shut-down of plant operations until the compressor can be repaired or replaced.

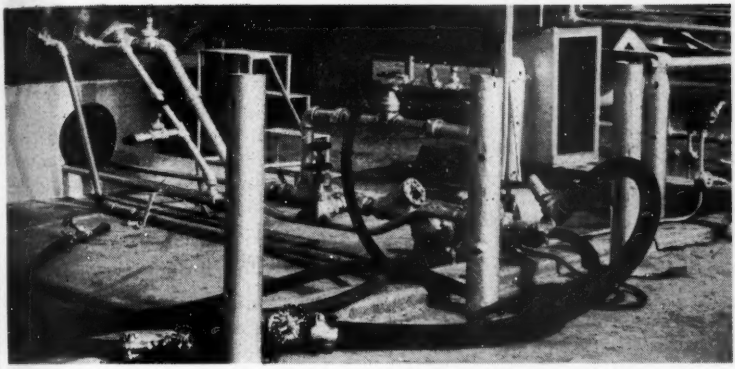
In planning for plant safety, one of the most important considerations is the materials from which the pipes, valves, and fittings are manufactured. NBFU Pamphlet 58 is quite specific in these matters. The use of cast iron is forbidden. Steel, wrought iron, and brass are permitted. Caution should be taken to use only these materials.

A great deal of confusion has been created in the industry by the use of trade names which give the implication of superior quality or strength to valves and fittings which are actually nothing but cast iron. Such confusing terms include "semi-steel," "steel iron," "high tensile iron," "duriron," and others. They may be very high quality cast iron, but they are not acceptable under the code.

The cost of steel is a little higher than wrought iron, but it offers certain technical advantages which are important in case of fire, but




An exceptionally good plant installation, showing welded steel piping, flanged joints for service disconnections, color coded liquid and vapor valves, and adequate protection against traffic damage.



Hoses deteriorate rapidly if exposed to the sun.

not of too great consequence under normal temperature conditions. Engineers point out that if, in case of fire, wrought iron becomes red hot and is then chilled by a stream of water, it loses its strength and becomes brittle like cast iron. It may then shatter from internal pressure, or rupture from external stresses. Steel retains its strength to a much higher temperature, and while it may be heated so hot that it may rupture from pressure, the chances of attaining the dangerous temperature are much less, and in case of rupture the steel merely draws out thin and splits, instead of shattering and throwing pieces around like a hand grenade. Steel pipe for handling gas in the liquid state should be extra heavy, and either of seamless construction, or the lap-welded type.

In assembling piping in the bulk plant, Pamphlet 58 states that the joints may be "screwed, flanged, welded, soldered or brazed with a material having a melting point exceeding 1000° F." Most engineers favor welding whenever possible, on account of the high strength and superior heat resistance as compared with the lower strength materials, and the assurance of a permanent seal as compared with screw joints.

Bolted flanges are considered superior to screw joints where it is necessary to provide for disconnection, as in the mounting of pumps, and for inserting heavy valves, or connecting the piping system to the tank. The expense of installing is a little greater, but the factor of safety against leaks is considered higher. The flanges should be welded instead of threaded to the pipe. The use of soldering and brazing should be limited strictly to joining copper and brass tubing, which is seldom used in piping bulk plants

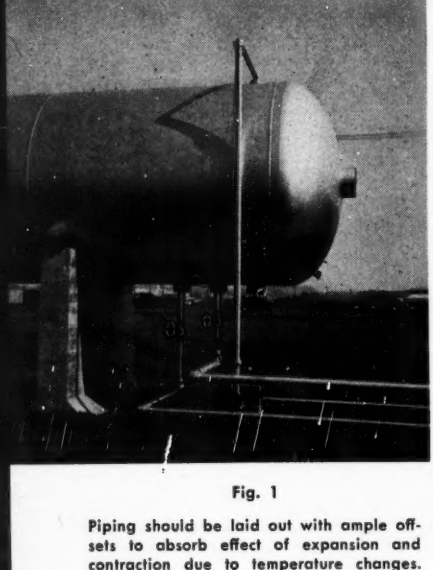


Fig. 1

Piping should be laid out with ample offsets to absorb effect of expansion and contraction due to temperature changes.

on account of the high cost of these materials.

Screwed joints may be used, and are necessary for installing many of the accessory items in the piping system. They are also the conventional means of connecting pumps and compressors. It should be borne in mind, however, that any screwed joint will eventually develop leaks if installed in such a location that the effect of contraction and expansion causes the threads to rotate against each other. This constant motion eventually causes wear and looseness, regardless of the presence of pipe-joint sealing compounds.

Installing threaded elbows where they will take up the motion produced by temperature changes is not the safest practice. The use of welded-up "offsets," or "dog's legs" of sufficient dimensions to absorb the motion through the elasticity of the material is preferable. (Fig. 1.) When threaded joints must be used, proper precautions against turning in the threads should be provided in the design of the piping system.

### Use Pipe Sealing Compound

Pipe sealing compound should be used in making up any threaded joint in the pressure system. The general practice is to spread this compound only on the male end of the thread. Any surplus compound is then pushed off by the female threads, and is kept on the outside instead of going inside the pipe, and creating the hazard of moving with the fuel into pumps, compressors, or valves. It has been pointed out, however, that a very thin coating of compound on the female threads will push ahead of the male end, and form a thin ring at the inside of the threaded joint, which is an effective dam against the pressure and adds security to the joint. (Fig. 2.) At least one major engineering firm in the industry follows this practice, with excellent results. It should be recognized that there is a definite hazard in using too much compound on the female threads. If followed, the practice should only be entrusted to workmen of good judgment and dependability, who have been specially trained through demonstrations in the shop before they are

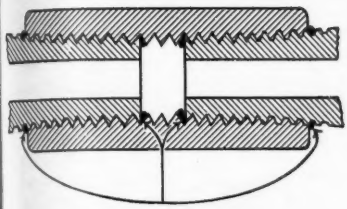


Fig. 2

Use of a thin coating of pipe joint sealing compound on the female threads builds a dam against leakage.

allowed to use it in plant installations.

Piping should be as straight as possible. It is subject to expansion and contraction with changes in temperature, and in a long run of pipe, the daily or seasonal change in length causes considerable movement. The supports of aboveground piping should maintain alignment, but allow this natural movement. Storage tanks also undergo various movements as the result of temperature changes. A tank will not only elongate on a hot day—it also bends like a sausage. (Fig. 3.)

Cases have also been observed in which tanks mounted with the axis east and west have undergone visible rotation in the saddles. All of these movements transmit motion to or impose stresses on the piping system. These tank movements in relation to the piping may be minimized, but not entirely neutralized, by keying or otherwise anchoring the tank to the saddle nearest the pipe connections. The other end of the tank should be left free to move.

The use of sections of flexible metal tubing to absorb the movements of the tank and piping system is acceptable under the rules laid down in Pamphlet 58, although several state codes do not permit their use. Many of the leading engineers avoid flexible connections even though they offer the simplest and least expensive means of providing flexibility. They point out that these units are entirely satisfactory if no plant fire ever occurs, but the materials from which they are made do not offer the safety of steel.

The alternative which should always be considered is the use of offsets in two planes, with the "legs" of sufficient length to provide necessary movement in any direction without overstressing any of the connections. Steel pipe bends quite readily under strain, but it has terrific resistance to twisting.

### Aboveground Piping Recommended

Piping should be aboveground if possible, for ease of inspection, repair, and maintenance. If the pipe is visible, any leaks which develop may be readily detected, and the external condition is always quite apparent. It is also possible to recognize the need for paint as protection against corrosion, and to paint the pipe with minimum inconvenience.

Where pipe must be installed underground, all joints should be welded, and the pipe should be coated and wrapped to prevent corrosion.

Aboveground piping must be "well supported and protected

Fig. 3

On a hot day the tank not only expands, it takes on a "sausage" shape, which transmits strains to the piping.

against mechanical injury," according to Pamphlet 58. It should be obvious that pipes laid on blocks of wood or other flammable material are not "well supported." Materials subject to decay or possible combustion should never be used, nor should loose piles of bricks be considered adequate. Metal or concrete supports, with adequate foundation, meet the requirements of safety.

Piping of pumps and compressors has a great deal to do with plant efficiency. Many pumps operate at an output lower than they should, due to restrictions of various kinds in the pump inlet line, and in some cases because the inlet line is too small, or too long. The pump should be located as close to the source from which the fuel is transferred as possible.

A compromise frequently will be required, where a single pump must be used for unloading tank cars and loading trucks, as is often the case in small plants. The piping from one or the other of the sources will frequently be undesirably long so fluid friction will cause resistance to flow. This may be minimized by using larger pipe.

It is good practice to use one size larger pipe on the pump inlet than on the outlet, using a reducer where the connection is made to the pump. This not only reduces the fluid friction in the pipe, but also reduces the cumulative effect in relation to volume of flow, of the resistances which are inherent in all of the elbows, fittings, valves and strainer installed in the intake line. If these resistances add up to too great a total, it is possible for the pump to "starve," in which case there is danger of producing a vapor pocket in the pump end of the intake line, running the pump dry and damaging it through overheating.

That these units in the piping produce a considerable resistance is shown in Table 1, which gives the resistance values of typical units commonly used in the intake line, in terms of comparable fluid friction in the number of feet of straight pipe offering the same obstruction to flow. The total resistance in the inlet piping may be estimated by adding up the calculated resistances in each unit in the inlet system, plus the number of feet of pipe, and multiplying by the appropriate factor shown in Table 2. This gives the feet of head necessary to overcome the resistance in the intake piping. Similar calculations using the values given in the two tables for the piping units of the same size as the pump inlet, and the next size larger, as recommended, show a substantial reduction in line resistance with the larger pipe.

The pump inlet line should also slope up from the pump to the source of fuel, avoiding dips or low sections which might obstruct the flow of vapor back to the tank when the pump is not in operation. (Fuel may vaporize at the pump, either from the heat of the pump after it is shut down, or from the absorption of heat from the sun. If it cannot be relieved back to the tank, it may become the cause of overheating the next time the pump is started.)

Pamphlet 58 specifies, "Where condensation may occur (in vapor lines) the piping shall be pitched back toward the container." Accumulation of liquid in a low spot in a vapor line seriously interferes with its functioning as a

**TABLE 1. RESISTANCE OF VALVES AND FITTINGS (EXPRESSED IN FEET OF PIPE)**

| Valves and Fittings | Size of Pipe Inlet Line | | | |
|---|---|---|---|---|
| | 1½" | 2" | 2½" | 3" |
| 3" x 2" excess-flow valve (Rego #2139) | 18 | 63 | 158 | 480 |
| Globe valve, wide open | 40 | 50 | 60 | 80 |
| Angle valve, wide open | 20 | 25 | 30 | 40 |
| Plug valve, wide open | 5 | 6 | 8 | 10 |
| Gate valve, wide open | 1 | 1 | 1½ | 1½ |
| Swing check valve | 5 | 6 | 8 | 10 |
| Elbow, 90° | 4 | 5 | 6 | 8 |
| Elbow, 45° | 2 | 2½ | 3 | 3½ |
| Tee, flow through side outlet | 8 | 10 | 13 | 16 |
| Tee, flow straight through | 2½ | 3 | 4 | 5 |
| Strainer*, same size as pipe | 25 | 60 | 42 | 42 |
| Strainer*, next larger size than pipe | 16 | 17 | 14 | 20 |
| Bushing | 2 | 2½ | 3 | 4 |

*Sarco Strainer. Most other makes have more resistance.

**TABLE 2. RESISTANCE-TO-FLOW OF PIPE (FOR LIQUID BUTANE, PROPANE, AND MIXTURES ONLY, EXPRESSED IN FEET OF HEAD, H)**

| Gallons per Minute Flow Rate | Resistance of One-Foot Lengths of Pipe | | | |
|---|---|---|---|---|
| | 1½" Size | 2" Size | 2½" Size | 3" Size |
| 10 GPM | .007 | ..... | ..... | ..... |
| 20 GPM | .023 | .008 | ..... | ..... |
| 30 GPM | .060 | .017 | .007 | ..... |
| 40 GPM | .111 | .031 | .012 | .004 |
| 50 GPM | .174 | .048 | .020 | .006 |
| 60 GPM | .250 | .070 | .028 | .009 |
| 70 GPM | ..... | .095 | .038 | .013 |
| 80 GPM | ..... | .123 | .050 | .017 |
| 90 GPM | ..... | .156 | .063 | .021 |
| 100 GPM | ..... | .193 | .078 | .026 |

Tables 1 and 2 through courtesy of Smith Precision Products Co.

pressure equalizer. If a compressor is installed in the vapor line, the liquid fuel may be drawn into the compressor, resulting in the types of mechanical damage previously mentioned.

It is not practical to mount a compressor so that the piping will drain back to an elevated storage tank, so special percautions should be provided in the layout of the piping to minimize condensation, even using visulation if the plant is in a cold climate, and to trap any liquid forming in the portions of the pipe where it may be drawn into the compressor. It is a good idea to install the compressor as close to the tanks as possible, and to put a liquid trap in the line just ahead of the compressor.

Plant operation practice should include the periodic drainage of this liquid trap, at such frequency that it shall never become completely filled. The vapor lines used in the compressor system should be of minimum size to carry the necessary volume, so the velocity of the vapor will sweep the lines clear of any liquid which may condense during operation.

Where shipments of fuel will be received by tank car, the unloading rack deserves particular attention, to minimize the time required in the unloading operation. The most efficient racks include an elevated platform, at a height slightly below that of the manhole on the tank car. To this platform is pivoted a boom which is normally up in the air but may be lowered to the manhole after the tank car is spotted on the track. This boom carries a walkway, and the three hoses. After connecting the hoses, the operator walks across to the platform, opens the line valves, and starts the pump and compressor

by means of the remote control switches that are mounted on the platform. He may then check his tank car connections with everything in operation, and without climbing or descending any ladders.

If the frequency of tank car unloadings does not justify this amount of construction, a practical substitute is the overhead boom carrying the hoses, with the line valves and switches accessible from the ground. With this installation, it is not necessary for the man to carry the heavy hoses up the car ladder, and only one trip up and down is necessary to check the manhole connections.

Truck-transport unloading racks are built at low level, as the transport outlets are almost always at chassis height. Connection may be made through the hoses carried on the transport, or by means of hoses attached to the unloading rack. In either case, the open end should be kept covered with a tight dust cap when not in use.

### Protect Hoses When Possible

If the installation includes a bulk truck loading rack, it will be advantageous to run the piping above the level of the top of the bulk truck tank, and to suspend the hoses so it will not be necessary to carry them up for attachment. This saves time as well as wear and tear on hose. A swivel joint should be attached to the end of the pipe riser if the hose will be extended in such a way that kinking may occur at the connection.

In selecting valves for bulk plant installations, only those which have been approved for L. P. gas should be accepted. These will be made of brass or steel. Any packings, washers, or diaphragms will be made of materials resistant to the action of L. P. gas, and in case replacement of these parts should ever become necessary, genuine replacement parts should be used. Ordinary plumbers' materials will not be satisfactory.

Valves for LPG service are modifications of three basic types—plug valves, which are quick acting; globe valves, which are slow acting; and gate valves, which are also slow acting.

### How Plug Valve is Designed

The basic design of the plug valve consists of a truncated cone, closely fitted into a cell of the same dimensions. It requires movement of only 90° to change from completely closed to full open, and when in the open position, the fluid flows straight through, without appreciable restriction. This offers the utmost efficiency for fluid transfer, but requires care in operation, as opening the valve too rapidly under a high pressure differential sends a violent shock through the line. (See Fig. 4)

The plug must be kept lubricated to prevent leakage past the cone, and this lubrication should be done at specified intervals, using a special lubricant made for this particular purpose. If lubrication is neglected, a leakage channel is likely to develop, and after this passage is once formed, it will be very difficult to seal without disassembling the valve.

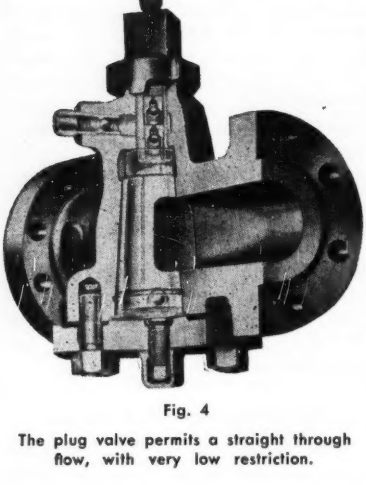


Fig. 4

The plug valve permits a straight through flow, with very low restriction.

Various modifications of the basic plug valve are on the market, at least one of which is in the form of a sphere rotating between neoprene seals. Regardless of design details, they all have the characteristics of fast action and minimum restriction to flow. The material most commonly used for LPG valves of this type is steel.

Globe valves are considerably less expensive than plug valves, and they are very widely used on account of the lower cost. In this type the closure unit is moved straight away from the seat by turning a threaded stem. Complete opening requires a number of turns, so the operation of the valve is slower than that of the plug valve. This delay is insignificant in normal plant operation, but might be of some consequence in case of an emergency shut-down requiring quick action. Globe valves are lighter in weight than plug valves, so they are widely used in equipping tank trucks and trailers where excess weight is important. The maintenance is relatively simple and inexpensive. (See Fig. 5)

As will be seen in Table 1, the globe valve offers several times as much restriction to flow as does the plug valve. This is due to the basic design, which forces the fluid to take a circuitous course on its way through. Because of this high restriction, the globe valve is the least desirable type to use on the suction side of the pump. In other locations where the fluid passes through under pressure, the restriction is not so serious.

The angle valve, which is a modification of the globe valve, is actuated in the same manner as the globe valve, but since the flow of the liquid after it leaves the orifice is more direct, the restriction is only about half as much. The operating principle is the same.

### Watch for Strain on Valves

Globe and angle valves are ordinarily made of brass. They should be installed in such a manner that they are subject to the least possible stress on the threads due to expansion and contraction of the piping.

The gate valve is so called because the closing unit moves across the channel like a sliding gate in a fence. In the original type, which is still largely used, the "gate" is a wedge which slips between matching surfaces in the valve body to

effect closure. The gate valve principle provides direct flow and very low restriction. They are quite satisfactory when properly protected against lodgement of dirt or foreign matter between the wedge and the seats.

The authorities of certain states refuse to accept the conventional wedge type gate valve because of the possibility of failure to close in the event that foreign matter should be present in the valve. Newer types of gate valves are designed to be self-cleaning. Whatever type is used, the competent designer will see that the valves are protected by the insertion of strainers at proper places in the line.

(Any of the above three types of valves may appear with modifications, produced by a number of manufacturers. Some of these variations have features which are claimed by the manufacturers to have great advantages over the simpler basic forms. In this group we may include a number of special manually, hydraulically, or automatically operated safety shutoff valves. While some of these valves have great value, they come under the head of "special equipment." We plan to cover them in special articles in later issues.)

The installation of pumps in the piping system calls for certain design features to protect the pumps against running dry, and in some cases to prevent the hazards of operating against closed lines. This subject has been covered in a number of articles in previous issues of BUTANE-PROPANE *News*, and the information applicable to their own design is available from all of the pump manufacturers. Since various makes of pumps operate on different principles, the circuit recommended by the manufacturer of the particular pump should always be used.

Safety relief valves of appropriate size should be used between every pair of valves in the piping system. This is necessary to protect against the possibility of bursting a pipe or rupturing a joint in case the pipe is closed off when completely filled with liquid,

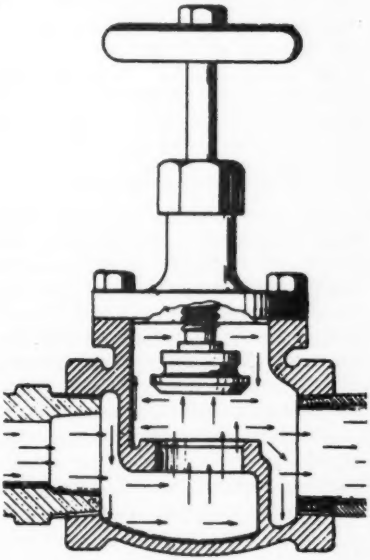


Fig. 5

The globe valve costs less, but develops restriction to flow by changing direction of flow.

and is then subjected to a rise in temperature.

Hose may not be used as a part of the permanent piping of any bulk plant in a location where it is continuously subject to line pressure. Its application is strictly limited to making connections between the plant piping and any vehicle or tank car receiving or discharging fuel through the plant pipe lines, and in making connection to cylinders in the bottling house. In all cases, safe design requires a shutoff valve in the pipe immediately back of the hose connection.

All hoses must be of a type approved for use with L. P. gas, and the requirements for approval include tests to determine that the hose has adequate strength and that it is made of materials which properly resist the solvent action of L. P. gas in the liquid phase.

### Hoses Should be Grounded

All approved hoses are made with grounding connections between th couplings, to prevent the possibility of ignition of gas due to the development of static electricity while the fuel is flowing. In order to complete this circuit, it is necessary to ground every loading and unloading rack.

The terminal valve on each hose should be made of brass as a precaution against sparking in case the hose is dropped or dragged. If a pipe nipple or threaded connection extends beyond the valve, it should also be made of brass, for the same reason.

Dragging of hoses over driveways, and across sharp obstructions, should be minimized in order to prevent premature wear of the covering.

Sunlight is one of the worst enemies of both natural and synthetic rubber compounds. The action of ultra-violet light tends to harden and crack these materials, so the life of the hose will be prolonged by sheltering it from direct sunlight when not in use. If the loading rack is not under roof, a special shelter into which the hose may be placed with the least possible effort, should be provided. (See Fig. 6)

### Must Test for Leaks

Pamphlet 58 (B.7-f) provides that "All piping, tubing, or hose shall be tested after assembly and proved free from leaks at not less than normal operating pressures." This testing may be done with water under pressure, but if this method is used, precautions should be taken to remove all moisture from the system after the test is completed.

The test may also be made with inert gas such as carbon dioxide or nitrogen. Air or oxygen should never be used, as there is danger that enough hydrocarbon may be present in the piping to produce an explosion if oxygen is present in the proper amount to produce a combustible mixture. When testing with inert gas, the test should be limited to a pressure slightly above the working pressure of the system at the highest anticipated temperature of the lines.

Any test involving high factors

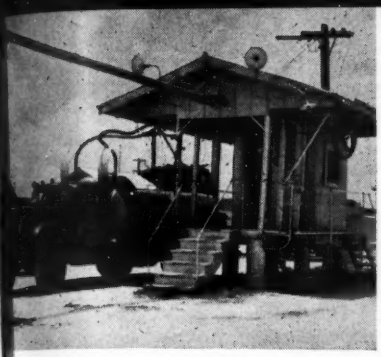


Fig. 6

A good bulk truck loading rack installation—piping and hoses over head, hoses readily accessible and protected from direct sunlight.

of safety should be conducted with water, as a rupture under a gas pressure test is likely to result in shattering, which would be highly dangerous to anyone in the vicinity. And of course no butane or propane should ever be introduced into the system until after the piping has been tested and proved to be free from leaks. When testing with inert gas, each joint should be coated with soapy water. Any leaks which may be detected should be corrected most thoroughly. A plant is either safe or unsafe, and it never gets any better by itself.

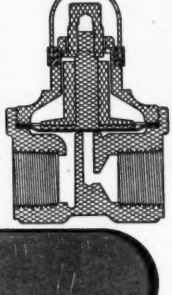
Piping must be kept painted to protect it from damage by weather. The paint should be some color other than brown, so rust streaks will be readily apparent. These stains give notice that it is time to clean and repaint the lines. It is standard practice in certain operations to use different colors to designate the liquid and the vapor lines and valves. This is a most commendable practice, and should be universally adopted as it aids materially in safe operation. Companies operating a number of bulk plants generally use the same color code in all of their installations, so a man familiar with the operation of one plant may, in an emergency, be sent to another plant, and operate it without special instruction.

Carrying the same thought to its logical conclusion, it would be a good idea for the entire industry to adopt a standard color code for designating the liquid and vapor lines in all plants. This would promote safety on a nation-wide scale, and would simplify the training of employes who move from one plant to another.

There are few plants in existance which have been so carefully designed that their operation could not be improved and made more economical by making changes. The utmost care and forethought should be exercised in planning a new plant so the highest efficiency may be realized at once, and so the need for subsequent changes may be held at the minimum.

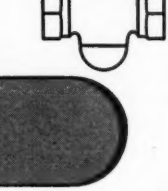
Pamphlet 58 covers the basic factors of safe design, based on a great deal of experience. It does not go into the matters of operating efficiency, which are the responsibility of the designer. Within the necessary safety framework, there is ample opportunity to design for convenience and operating economy. The degree to which this is accomplished will have a profound effect on the future profits of the business.

GET *all...*



**AUTOMATIC CUT-OFF VALVE**

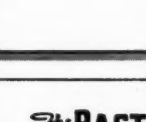
The REGO No. 2938 valve automatically cuts off the gas flow through the service line if the pressure drops to less than 5" water column.



**MANUAL SHUT-OFF VALVE**

The No. 2938 replaces the conventional gas cock, providing maximum safety and permitting the serviceman to repair or relocate the appliance without interrupting the flow of gas to other appliances on the system.

*Plus . . .*



**EXCESS FLOW VALVE**

In the event that the piping or fittings between the valve and the appliance should fail, the No. 2938 functions as an excess flow valve, cutting off the flow instantly.

REGO is the registered trade mark of the Bastian-Blessing Co.

REGO

LP GAS EQUIPMENT

Stocked by These Distributors

GAS EQUIPMENT CO.
*Dallas, Texas*

GAS EQUIPMENT SUPPLY CO.
*Atlanta, Ga.*

GAS EQUIPMENT CO. of DENVER – *Denver, Colo.*

A. C. FINK, S. A., *Mexico, D. F.*

EMPIRE BRASS MFG. CO., LTD.
*London, Canada*

MEMBER
national LP-GAS PROMOTIONAL program

The BASTIAN-BLESSING Company

4201 W. Peterson Ave., Chicago 30, Illinois

PIONEER AND LEADER IN THE DESIGN AND MANUFACTURE OF PRECISION EQUIPMENT FOR USING AND CONTROLLING LP-GASES

# How Tests Are Made for LPG

By HARVEY MENARD
General Superintendent of Gas Department, Signal Oil and Gas Co., Long Beach, Calif.

BEFORE we discuss the testing of LPG, which is the theme of this paper, it might be in order to delineate the part that liquefied petroleum gas plays in our industry.

Natural gasoline production amounts to about 560,000 bbls./day in the United States, of which about 80,000 bbls./day are produced in California. About 43% of the natural gasoline plant output in the United States is LPG. Actually a little over four billion gallons of LPG were sold in 1951 which represents a 25% increase over the previous year. Of this four billion about 2.8 billion gallons were sold as domestic and motor fuel, including fuel used for households, irrigation, pumping, tractor, chicken brooder heating, internal combustion engines. About 230 million gallons were sold for industrial uses, about 250 million gallons were sold for gas manufacturing, and about 750 million gallons were sold for chemical manufacture.

The LPG industry has grown from its inception about 40 years ago and through development during the last 20 years to a size surpassing the manufactured gas industry. Including the retail value of the gas sold and the value of equipment, gas ranges, heaters, refrigerators and other appliances, the retail business amounts to better than a half-billion dollars annually.

To facilitate the development of this rapidly expanding industry and to standardize the testing of products, the California Natural Gasoline Assn. established 13 years ago a committee to accumulate a testing manual. This bulletin has just been brought up-to-date, and will contain the following tests, when published:

(1) Vapor pressure
(2) Specific gravity
(3) Butane weathering
(4) Propane weathering
(5) Water content

**The LPG industry during the last 20 years has developed to such a size that it now represents more than a half-billion dollars of retail business annually. To facilitate the development of this industry, the California Natural Gasoline Assn. 13 years ago, established a committee to accumulate a testing bulletin. This bulletin has just been brought up-to-date and will be published soon. The accompanying paper explains these tests in detail. It was presented at the annual CNGA fall meeting on Oct. 9.—Editor.**

**Vapor Pressure Test**

The vapor pressure test is a means of determining at a specific temperature if a product can be held in the liquid state in a given pressure storage vessel. The test apparatus is filled with the liquid product. Twenty percent of the liquid is removed to form a vapor space. The apparatus and its contents are brought to a temperature of 100°F and the resulting pressure in the apparatus is reported as the vapor pressure of the product tested in pounds per square inch gauge at 100°F.

Knowing the vapor pressure of the product at 100°F, the vapor pressure of the product at other temperatures may be determined by means of charts published with the CNGA LPG Bulletin. Thus, if temperature of storage or transportation tanks is known and the maximum working pressure of the tank is known, then the maximum vapor pressure of the product for the tanks can be determined. By codes of various regulatory bodies such as the state of California, the National Board of Fire Underwriters, etc., storage vessels for LPG must have a design working pressure of about 20% higher than the maximum product used in the vessel. A 250-lb. vessel can be filled with propane product of a vapor pressure up to about 215 lbs., a 150-lb. vessel is limited to a product of about 120 lbs. vapor pressure.

There are vapor pressure tests run at temperatures other than the 100°F adopted as a standard by CNGA. This data may be used readily by means of the vapor pressure temperature charts in the bulletin.

**Specific Gravity Test**

The specific gravity of an LPG is determined at 60°F by means of an hydrometer in a lucite cylinder. The product to be tested is introduced into the cylinder in such a manner that the cylinder is about half full of liquid and half full of vapor. The floating hydrometer can be observed through the transparent walls of the lucite cylinder, and the specific gravity is read directly from the scale of the hydrometer.

If the temperature of the liquid varies slightly from 60°F the specific gravity may be corrected to 60°F by means of a chart published in the CNGA LPG bulletin. (This test is a recent addition to our bulletin and has been taken substantially as developed by the NGAA for their test method bulletin. As you probably know the CNGA and the Natural Gasoline Assn. of America exchange ideas and data in an effort to keep current in the thinking on our common problems.)

Knowledge of the specific gravity of a product permits the calculation of the weight of a known volume of the product. Thus a tank truck will weigh a given amount when filled to the 90% outage point with a product of given specific gravity, and the truck can be filled to maximum capacity without exceeding its weight limit. To a limited degree, an approximate knowledge of the percentage of butane and propane in a mixture can be judged from knowledge of the

Every driver delivering SINCLAIR LP-Gas carries extra helpers, every mile of the way – five hidden ingredients that benefit all concerned, from the refinery through to the home.

These extras are basic Sinclair qualities – INTEGRITY, REPUTATION, RESPONSIBILITY, PERFORMANCE and GOOD SERVICE.

Distributors like to do business with SINCLAIR, a company operating exclusively as a *wholesaler* of LP-Gas . . . never in competition with any customer. *Investigate.*

# SINCLAIR

## *A Great Name in Oil*

SINCLAIR OIL & GAS COMPANY

LIQUEFIED PETROLEUM GAS DIVISION • SINCLAIR BUILDING, TULSA, OKLA.

specific gravity of the mixture and the specific gravities of the pure propane and butane involved.

**Butane and Propane Weathering Tests**

The butane weathering test is a means of determining an approximate analysis of LPG mixtures. It consists of drawing a pre-cooled sample into a graduated centrifuge tube and allowing the contents to weather or distill off under controlled conditions. Temperatures of the boiling liquid are read when the remaining liquid is 50%, 15% and 10% of the original sample. When the temperature has risen to a predetermined end point the residual volume is determined. This data may be applied to a weathering curve established by research accepted by CNGA and published in the CNGA LPG bulletin, and an approximate analysis of the mixture may be determined.

The propane weathering test is used when the product to be tested is of the order of 90% to 100% propane. The same general procedure is followed in performing this test as is followed in the butane weathering test. As the propane weathering test is designed to determine the isobutane content of a sample that is predominately propane, the only temperature observed is the predetermined end point temperature between the propane and isobutane boiling points, which temperature will vary with the barometer. The volume left when this end point temperature has been reached is used to judge the amount of isobutane present in the original sample.

The basic theory behind both of these weathering tests is that the sample will boil away on various temperature plateaus. A measurement of these plateaus and a comparison with plateau information from known samples will give an approximate analysis of the sample. Thus, a propane sample may boil at approximately -44°F for 90% of its volume, and then the temperature may rise slowly to approximately -37° with a residue of 5% at that point.

The product has boiled at the propane plateau for 90% of its volume and then passed the midpoint between the propane and isobutane plateaus at 95% of its volume. The 5% remaining does not represent 5% isobutane but only 1.96% isobutane, because there is a considerable amount of propane still left in the sample. In other words, the separation between propane and isobutane is not efficient in a one tray distillation or simple weathering operation as we have here. Were it otherwise, we would not need fractionating columns to rectify gasoline - butane - propane mixtures.

**Water Content**

Cobaltous bromide performs the function of determining the water content of LPG because of an unique color change effect. When dry cobaltous bromide is moistened with water, it changes color from blue or green to pink. This color change occurs when water is present in excess of 20% of its solubility in LPG at 80°F or 50% of its solubility at 32°F. In the test LPG vapors from a source

# To LP-Gas Dealers Who Have Never Used Nor-Tex Truck Tanks...

## *These Facts Can Mean* GREATER PROFIT *for You!*

**Nor-Tex Truck Tanks are designed and built by men with years of LP-Gas bulk plant experience—men who are thoroughly familiar with the actual filling of fuel tanks, bottles, etc. That's why you can be absolutely certain of:**

- **Better, Quicker Delivery**
- **Lower Maintenance**
- **Longer Tank and Truck Life**
- **Greater Safety Features**

1800 WG STANDARD TWIN

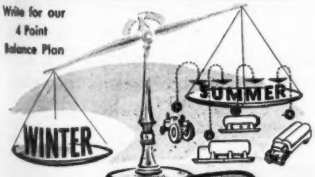
Every Nor-Tex Truck Tank is carefully engineered for dependable, efficient, fast operation. Every tank is noted for its ease and speed of handling and dispensing pay loads. Although they're compact, great care is given to proper load distribution. It costs less to own and maintain a Nor-Tex tank. Every Nor-Tex unit is built to a critical standard with safety margins far in excess of federal, state and local regulations. That's why you can serve your customers Better—Quicker—Longer... *at less cost* with Nor-Tex LP-Gas Truck Tanks.

*NEW Reo*
*Factory Equipped for LPG*

1600 WG STANDARD TWIN

Whatever your truck and tank requirements may be.. we either have or can supply a Nor-Tex Unit that's factory tailored to your operation. Choice of accessories. If you have a special problem, call or write us. Interested attention, experienced assistance and helpful suggestions are yours for the asking.

Write for our 4 Point Balance Plan




1400 WG SUPER DE LUXE TWIN

**Nor-Tex**

**North Texas Tank Co.**
P. O. Box 519 • Denton, Texas

**Phone Central 5416**

LPGA **Manufacturers of Fine LP-Gas Equipment**

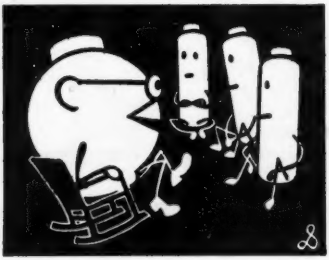
to be tested are introduced into a chamber containing caboltous bromide and at a pressure depending on the vapor pressure of the mixture being tested. In this manner the partial pressure of the water vapor over the cobaltous bromide is maintained proportional to its concentration in the mixture. If the water content in the LPG tested exceeds the quantity noted above (20% at 80°F, 50% at 32°F) then the bromide will change color and show a wet test. Of course, entrained water droplets will show a wet test also.

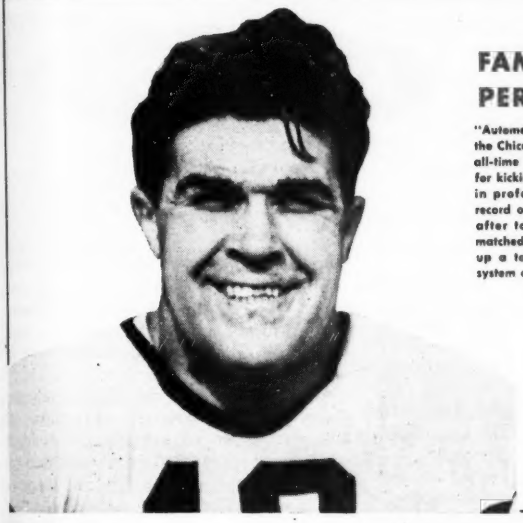
The test should be performed on a vessel that is at least 75% full, because the water vapor will tend to flash into the vapor phase as liquid is withdrawn and give a false indication of the water content of the tank. Withdrawal of the vapor from a wet tank will dry the tank, because the vapor phase will hold more water than will the liquid phase. Conversely, a tank car full of wet propane vapor with no liquid present can be filled with dry propane, and the tank car may then give a wet test.

Temperature level is also an item, because it is possible to fill a tank at a high temperature which will give a dry test and which will give a wet test in a low temperature climate. The solubility of water in propane varies with temperature.

The tests which have been described are those that have been standardized by the CNGA, and they are available in the "Tentative Standard Methods of Test for Liquefied Petroleum Gases." These tests are adequate to describe an LPG product. There are certain specifications of LPG, such as odorization, that are not within the scope of the CNGA bulletin. Propane must be odorized for most of its end uses with the exception of its use as a chemical raw material. The state of California has established a basis for such odorization.

There are problems that the industry faces, such as the corrosion problem, for which no satisfactory test has yet been found. When an adequate test appears that will define corrosivity and satisfactorily determine its limits, the CNGA will undoubtedly include such a test in its LPG bulletin.





## FAMOUS TOP PERFORMERS

**"Automatic Jack" Manders of the Chicago Bears. He holds the all-time individual-play record for kicking the most field goals in professional football. His record of 72 consecutive points after touchdown is also unmatched. In eight seasons he rang up a total of 401 points. His system of kicking has paid off!**

# A. O. Smith Liquid Gas Systems out-perform the field!

**You can't lose** when you handle A. O. Smith Liquid Gas Systems. They are the product of one of the nation's largest and most dependable manufacturers. Here's why they merit your complete confidence:

- **Direct to your yard delivery**
- **Written guarantee on every tank**
- **Exclusive Vapor Dome**
- **Easy-to-read eye-angle gauges**
- **Distinctive, streamlined appearance**
- **Standardized installation**
- **U-69 and UL approved**
- **Many other features**

**A.O.Smith**

LIQUID GAS SYSTEMS

Atlanta • Chicago 4 • Dallas 2 • Houston 2 • Los Angeles 22 • Denver 2
Midland 5, Texas • New Orleans 12 • New York 17 • Philadelphia 3
Pittsburgh 19 • San Francisco 4 • Seattle 1 • Springfield, Mass.
Tulsa 3 • Washington 6, D.C.
*International Division, Milwaukee 1*

**Establish yourself,** now, as the A. O. Smith Liquid Gas System Dealer in your area, and reap the profits which our dealer franchise makes possible. Mail the coupon for complete information.

**A. O. Smith Corporation**
**Dept. BP-1152, Milwaukee 1, Wisconsin**

Without obligation, send me complete information about A. O. Smith Liquid Gas Systems and how selling them can increase my profits.

Name_____

Firm_____

Address_____

City_____ Zone____ State_____

# ASSOCIATIONS

## CNGA

At the 27th annual fall meeting of the California Natural Gasoline Assn. in Los Angeles Oct. 9-10, several papers were delivered that were of special interest to the LPG industry. They included:

"New CNGA LPG bulletin," by Harvey Menard, Signal Oil Co. (Published elsewhere in this issue.)

"Tentative Standard Procedure for Sampling Natural Gas and Gasoline," by Guy Corfield, Southern California Gas Co.

"Recent Trends and Developments in Automotive Engines," by Dr. Peter Koropoulos and Craig Marks, California Institute of Technology.

"Recent Trends and Developments in the Natural Gasoline Industry," by John F. Lynch, president, Natural Gasoline Assn. of America.

Warren H. Kraft, Honolulu Oil Corp., is current president of the CNGA; Fred L. Hartley, Union Oil Co., is vice president and E. R. Millett, Jr., secretary-treasurer.

## Florida

More than 60 L. P. gas service men attended the 2nd sectional service school at Orlando, Sept. 17, a joint activity of the Florida L. P. Gas Assn. and the Southeastern District office of the LPGA.

Instruction for this meeting was given by Odell Glass, Atlanta, who covered the subject of regulators and related fittings; Herchel R. Coile, Minneapolis-Honeywell Regulator Co., spoke on controls. Other speakers and their topics were: Marshal Poag, Servel, Inc., gas refrigerators, and Orrin V. Branson, Metalbestos Co., venting.

Bill Chandler, Gas Oil Products, Coral Gables, who is chairman of the committee on sectional meetings, announced that the next meeting of the association will be held on December 3 at either Ocala or Gainesville. Al Spiller, Suburban Gas Co., Saint Augustine, was appointed local chairman for the December meeting.

## Iowa

Tom Turner, Blue Flame Gas Co., Mount Pleasant, was elected president of the Iowa L. P. Gas Assn. at their annual convention, Sept. 22-23, at the Savery hotel, Des Moines. The speakers at the meeting were Zack Cook, Iowa state fire marshal and I. F. Statz, supervisor of fire prevention in Wisconsin, who spoke on the revision and enforcement of safety regulations governing liquefied petroleum gas.

Other new officers include: Eugene Schragge, vice president, E. S. Harms All-Gas Co., Allison; Lee Rasmussen, secretary, Munn & Cassady Co., Inc., Des Moines; and Charles O. Russell, treasurer, Rapid Thermogas Co., Des Moines.

STAN BESKE

A. C. FERRELL

## LPGA Board of Directors

The imperative need for more and better statistics for the liquefied petroleum gas industry, prompted the board of directors of the LPGA to establish the Market Research committee as a standing committee of the organization at the directors' quarterly meeting held in Minneapolis Sept. 11-12. A. F. Smith, A. O. Smith Corp., Milwaukee, is the chairman.

This committee, serving in the past on a temporary basis, reported the completion of an initial survey of tank manufacturers and announced that a survey is now being made of L. P. gas consumers in Georgia, Kansas and Maine to be used as a check against the accuracy of the 1950 U. S. census.

The board meeting, presided over by President F. N. Mabee, was attended by more directors and visitors than have heretofore gathered at such occasions. It was reported by A. C. Ferrell, membership committee chairman, that LPGA membership has now reached a new high of 1530. The association has doubled its roster since 1950.

The directors passed a resolution disapproving the minimum distributor bulk laws and regulations which have been established by several states and which require a dealer to provide large storage facilities in those states before he can make deliveries therein.

Stan Beske, Kay Gases, Chicago, will chairman the arrangements committee for the 1953 LPGA convention in Chicago next year. The dates for the meeting will be May 3-6 at the Conrad Hilton hotel.

Vacancies for state directorships from Tennessee and Nebraska were filled by the elections of T. G. Tackett, National Butane Co., Memphis, and George C. Vogl, Blaugas Co., Omaha, respectively.

The Minnesota Petroleum Gas Assn. was host to the LPGA board during its Minneapolis meeting at a cocktail party and a tour of the Twin Cities.

In recognition of his many contributions to the L. P. gas industry as chairman for the past two years of the important Technical and Standards committee of the LPGA, Robert E. Poethig, The Bastian-Blessing Co., Chicago, was presented with a handsome wrist watch by the group at its Sept. 24 meeting in the Palmer House, Chicago. Left to right: Walter H. Miller, Dri-Gas Corp., Chicago, past chairman of committee; A. H. Menuet, Skelly Oil Co., Kansas City, Mo., who took over as chairman at this meeting, and Mr. Poethig.

## Missouri

The Missouri L. P. Gas Assn., in cooperation with the Missouri School of Mines at Rolla, has made plans to hold a service school this fall. Some of the subjects which will be covered are gas appliance venting, L. P. gas carburetion, Servel service and proper equipment installation. A Missouri L. P. gas dealer is not necessarily required to be a member of the association to take advantage of the school.

D. M. Orcutt, secretary of the association, has sent out notices of this service school to dealers in Missouri asking them if they would like to attend.

## Pennsylvania

The annual meeting of the Pennsylvania L. P. Gas Assn., held at the Penn Harris hotel, Harrisburg, Sept. 22, was attended by approximately 275 dealers and suppliers and representatives of the gas utilities. J. E. Shaffer, past president, opened the meeting with a short address while the newly elected president, A. C. Horner, opened the afternoon session.

The new officers elected at this convention were: A. C. Horner, president, A. C. Horner, Inc., Harrisburg; A. E. Bone, vice president, Eastern Propane Co., Malvern; and William Plank, secretary-treasurer, Plank's Home Center, Hollidaysburg.

Directors elected included: Mark

New officers and directors of the Pennsylvania LPGA are, left to right (back row): Frank Thompson, Carlisle Propane, Carlisle; W. J. Malchiodi, Protane Corp., Erie; A. F. Eby, Suburban Gas Service, Harrisburg; Mark Haines, Gas Oil Products, Oxford (all directors). Front row: Charles Mertz, Tri County Equipment, Northumberland, director; A. E. Bone, Eastern Propane Co., Malvern, vice president; A. C. Horner, A. C. Horner Inc., Harrisburg, president; William Plank, Plank's Home Center, Hollidaysburg, secretary and treasurer; L. L. Myers, Pyrofax Gas, director.

# SALES-HOT *because it's* "Touch-Cool"

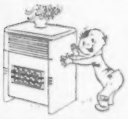
THE GREAT *NEW*

## Dearborn® Guard-O-Matic

**GAS AREA HEATER**

***The ONLY fully vented, radiant, circulating gas area heater on the market with Touch-Cool Cabinet!***

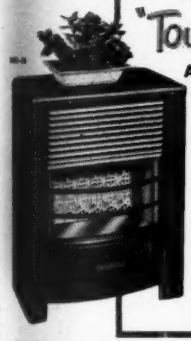
The new Dearborn fully vented GUARD-O-MATIC area heater is *sales-hot* because it's "*touch-cool!*" Never gets hot on top, sides or bottom, yet gives an abundance of circulating and radiant heat. Because your customers can put flowers, books or bric-a-brac on top, you can proudly sell the Guard-O-Matic as a beautiful piece of furniture. Available in 3 sizes: 30,000, 45,000, 65,000 Btu input capacities. Dearborn — America's most wanted gas area heater.



THE ORIGINAL

## "Touch-Cool"

**AREA HEATER**



**The famous Dearborn unvented COOL SAFETY CABINET**

Available in 12,000, 20,000, 25,000, and 35,000 Btu input capacities.

**DEARBORN—** *YOUR BEST BET FOR SALES, FOR PROFIT!*

## *Compare!* ALL THESE FAST-SELLING FEATURES

- Touch-Cool cabinet—never hot on top, sides or bottom.
- High-Crown burner—more heat from fuel for greater economy.
- Glo-Brite radiants—better combustion, more radiant heat.
- Front-facing louvers—no more streaked walls or ceilings.
- Automatic lighting with 100% safety pilot.
- Choice of 4 types of automatic controls for most convenient operation.

**Write for "The Story of Area Heat"**

***AGA approved for all types of gas***

**Dearborn®**

**STOVE COMPANY**

CHICAGO • DALLAS

**DEARBORN STOVE CO., 5830 N. Pulaski, Chicago 30, Ill.**

Please send me a free copy of your booklet "The Story of Area Heat."

*Name*_____

*Firm Name*_____

*Address*_____

*Town*_____ *State*_____

Haines, Oxford; L. L. Myers, New York City; Frank Thompson, Carlisle; Allen F. Eby, Harrisburg; William F. Cutten, Wyoming; Charles Mertz, Northumberland; H. E. Double, Bradford; J. E. Shaffer; G. E. Herb, Somerset; John Goss, Pittsburgh; and W. J. Malchiodi, Erie. Directors at-large elected were W. D. Cook, Whippany, N.Y. and T. H. Kapnek, Philadelphia, Pa.

The convention was concluded with a friendship hour, banquet and program of entertainment.

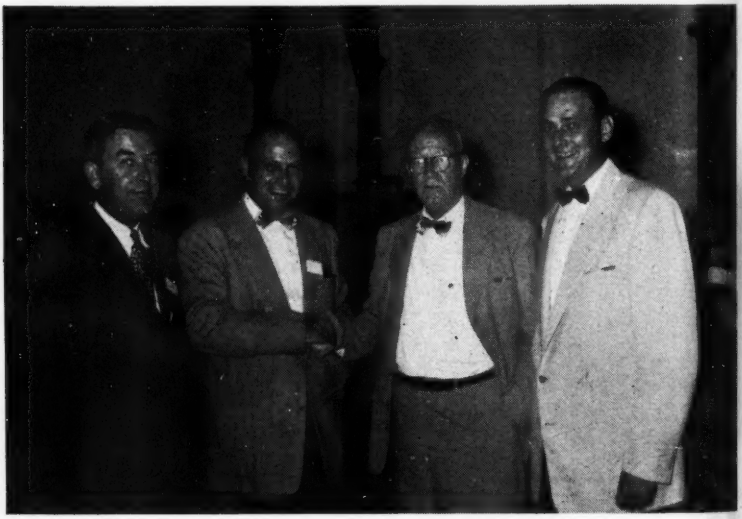
## Virginia

Fred R. Hynson, Hesco Gas Service, Manassas, was elected president of the Virginia L. P. Gas Assn. at their recent meeting in Natural Bridge, Sept. 15-16.

Other officers elected at this convention include George W. Noblett, vice president, Northern Neck Gas Co., Kilmarnock, and J. B. Christiansen, secretary-treasurer, Pyrofax Gas Co., Richmond.

## Utah

The members of the Utah L. P. Gas Assn. held their fall meeting in Salt Lake City on Sept. 29-30. The business meeting included a discussion of proposed legislative action and insurance problems, which was followed by the re-election of all of last year's officers. They are: L. M.



The new officers of the Virginia L. P. Gas Assn. are (left to right): George W. Noblett, vice president, Northern Neck Gas Co., Kilmarnock; Ralph H. Fry, retiring president, Bristol Gas Co., Bristol; Fred R. Hynson, newly elected president, Hesco Gas Service, Manassas and J. B. Christiansen, secretary-treasurer, Pyrofax Gas Co., Richmond.

# Longview, Texas Dealer

# SELLS 11 SERVELS IN 10 DAYS

with

## Servel "10-To-1 Payoff" Promotion!

**RED HOT DEAL!** Close refrigerator sales with sensational offer—$10 cash just to try a new Servel for 10 days! Servel takes the risk on installation and delivery costs! You get *refrigerator profits* plus *gas profits!* Call your Servel Distributor now!

Servel

**The name to watch for great advances in REFRIGERATION and AIR CONDITIONING**

Servel Inc., Evansville 20, Indiana
In Canada, Servel (Canada) Ltd.
548 King St. W., Toronto, Ont.

Haines, president, Inland Gas Co., Salt Lake City; R. D. Kier, vice president, Utah-Colorado Gas Co., Vernal; and C. A. Rodman, secretary-treasurer, The Lang Co., Salt Lake City. J. V. Caughran, Cedar City, and Fred La Frentz, Cedar City, compose the new directors, while O. C. Wiggle, and Jack Kier, Vernal, are holdover directors.

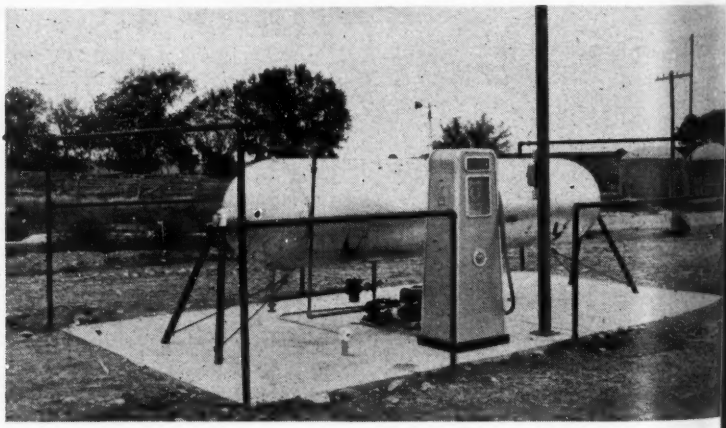
A few of the speakers and their topics include: D. Ray, attorney, Salt Lake City, "Some Legal Aspects of the L. P. Gas Industry;" H. S. Moor, Utah Fire Rating Bureau, Salt Lake City, "How the Rating Bureau Considers L. P. Gas," and Charles Corken, Corken's, Inc., Oklahoma City, Okla., "New Opportunities For Management." Additional speeches included: J. C. Crawford, secretary, Mountain States District LPGA, Denver, Colo., "New Ways to Sell Modern Gas Ranges;" W. I. Richards, Remington-Rand, Inc., Salt Lake City, "Records For the L. P. Gas Dealer;" and C. D. Havens, Dearborn Stove Co., Chicago, Ill., "Customer Relations."

The meeting closed with a banquet and entertainment.

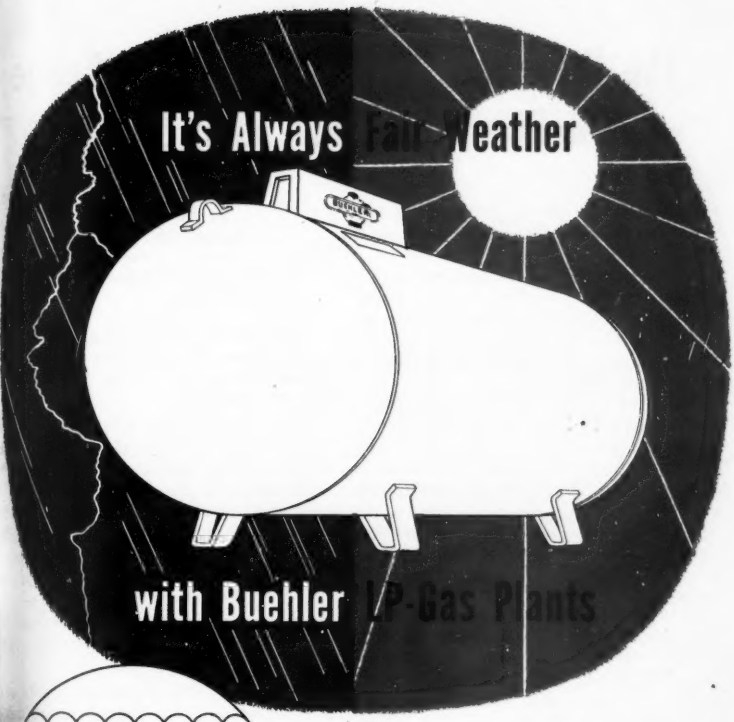
## North Carolina-South Carolina

The joint meeting of the North and South Carolina L. P. Gas Associations at Asheville, Sept. 19-20, was attended by more than 230 men and women. One of the highlights of the convention was a talk by J. Archer Kiss, the opening speaker, on "The Human Side of Today's Salesmanship."

M. L. Trotter, president of the South Carolina LPGA; Ralph Morris, president of the North Carolina LPGA, and R. H. Mahnke, LPGA manager of district organizations, spoke on the work of the various units of the association.



This newly established LPG service station at Johnson's Corner, Colo., north of Denver, was designed by Eaton Metal Products Co. (which also made the 1000-gal. tank) to fill tractors, trucks and bottles. The location is in a rich farm area and on busy highways near Longmont. The Colorado Rural Gas Service supplies the fuel.



Among many reasons for the exceptional loyalty of users and dealers to the Buehler line, is one that never appears on a specification sheet, bill of sale, or profit statement. It is "Freedom from Worry."

Users know that any Buehler LP-Gas plant will give reliable service in the face of bad weather, extreme temperatures; even old man Time himself. The Buehler moisture-free feature finds favor everywhere. Top-mounted fittings and regulator are enclosed in a heavy guard box. Factory inspection standards exceed required codes. But what's more important is the "100% Quality" which built Buehler's reputation for making the finest LP-Gas plants obtainable.

**BUEHLER** QUALITY YOU CAN SEE

**TANK & WELDING WORKS**

5000 PACIFIC BLVD., LOS ANGELES 58, CALIF.

# The Way You "Present" the Gas Range Will Determine Your Sales Success

By M. A. ENNIS*
Employe Training Director,
National Committee for
L. P. Gas Promotion, Chicago

"LET'S do things we know are necessary—in order to make a sale."

Demonstration of a product as it relates to the benefits for the prospect, are the kind of demonstrations that pay off. Demonstrations are one of the things "you know are necessary to make a sale."

No two people will demonstrate their product in the same manner or in the same words — you do it in your words — but make sure that a full and complete demonstration is made.

To me, there is a vast difference between "presenting" a range to a prospect, and "demonstrating" a range.

"Presenting" a range is like an introduction — "Mrs. Jones, may I present Mr. Gas Range?" Mrs. Jones says, "How do you do?" What Mrs. Jones means is, "Mr. Range, what can you do?" How do you do it?" What can you do for me?"

This calls for demonstration. Demonstration means a demonstration of values — use values! Demonstration of features and devices that are built in. It is not enough that we as salesmen just demonstrate the function of the device or feature, we must demonstrate the benefits that can be derived from those features and devices.

People spend money for products because they feel that they receive a value for the dollar spent.

Money is exchanged for goods—the value of the goods must be (in the prospects mind) equal in value to the dollar spent.

The exchange of goods for dollars takes place between two people. The buyer and seller — two humans — so keep it human.

How better then, can you acquaint the prospect with the value of your product, than through demonstration.

Because I am not representing a manufacturer of L. P. gas ranges and because I am not acquainted with special features of these displayed ranges, I wish to only speak of the three basic features that are common to all ranges. These basic features should always be demonstrated — Top Burners—Oven—Broiler.

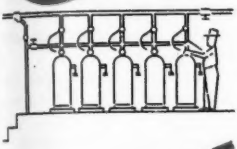
Let me, therefore, discuss with you the methods of L. P. gas range demonstrations. (1) The 1941 to 1952 method, (2) the 1952 method, and (3) the method we know is necessary to make sales.

1. "1941-1952 method" — (Demo.) "Here it is — there is the oven — there is the broiler — take it or leave it — it's $289.50."

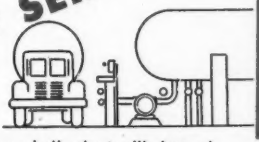
2. "1952 method — (Demo.) "Here is a good range — there is the oven — our warehouse is full — we cut the price on the model $50 to get rid of them — we cut prices

*A paper read at the Kentucky LPGA convention in Louisville.

NUMBER **2** IN A SERIES DISCUSSING THE MOST EFFECTIVE SERVICE RANGE FOR



# BULK PLANT SERVICE



**SMITH**
PRECISION
Butane-Propane
**PUMPS**

The size of pump to select for your bulk plant will depend upon the amount of pumping to be done, the types of services to be handled, and the importance of speed in transferring. It is also necessary to consider the limitation to be placed on expenditures, as installation and operating costs are much higher for large pumps than for smaller models.

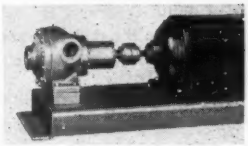
For small bulk plants, the 35 GPM Model MC-1044H pump is a good choice. When properly installed, it will transfer into storage and load delivery trucks at about 2000 gallons per hour. It will fill up to 4 cylinders on a manifold in from 3 to 5 minutes.

For the average bulk plant, the 50 GPM Model MC-2 pump will transfer into storage and load delivery trucks at about 3000 gallons per hour. It will fill up to 6 cylinders on a manifold in from 3 to 5 minutes.

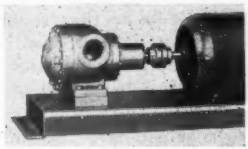
Where very fast transfer into storage is required, and sufficient output to load two delivery trucks at the same time is desired, the 100 GPM Model MC-3 should be specified. When properly installed with 3" piping and valves, this pump will deliver about 6000 gallons per hour. The MC-3 has too large an output to be economical in cylinder filling service unless about 12 cylinders are filled simultaneously on a manifold.

Smith Precision Pumps cover a range of capacities from 4 to 150 GPM. There are six sizes of pumps for direct connection to electric motor drive at 1800 RPM, and four sizes for truck mounting, to be operated at the lower speeds of 500 or 900 RPM. Write to us for further details, and for installation suggestions.

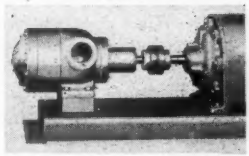
MC-1044H



MC-2



MC-3



**SMITH**
**PRECISION PRODUCTS COMPANY**
1135 MISSION ST., SOUTH PASADENA, CALIF. • PHONE PYRAMID 12293

lower than anyone else in town, so you probably want to buy one."

3. "The method we know is necessary" to make sales.

Let's face facts. Let's be realistic. Let's get down to earth and think about the things we know are necessary in this business of selling. Let's talk about you!

1. You are in business to make a profit.

2. You must sell merchandise to make that profit.

3. You must sell L. P. gas to make that profit.

4. You must sell gas appliances to consume L. P. gas, to make that profit.

5. You must have salesmen to sell for you.

6. You must have people to render the service function for you.

### Your Products

1. Must be useful to the prospect.

2. Must provide a service and a use value for your prospect.

3. Must be time saving, convenient, modern, durable, well designed and have appearance value.

4. Must be easy to operate and economical.

5. Must have the built-in values to meet the needs of your prospects.

Let's consider the American housewife. What does she want in a cooking appliance? She wants a cooking appliance that will:

1. Prevent the loss of healthful qualities such as vitamins and minerals.

2. Prevent the loss of original color of foods.

3. Prevent the loss of the original taste of foods.

4. Prevent the loss of moisture or juice of foods.

5. Prevent the loss or destruction of shape and texture of foods.

6. Prevent boiling over or boiling dry of foods.

7. Prevent watching, waiting and time consuming efforts.

8. Prevent high operating costs and interruption of service.

Your prospects also want a cooking appliance and a fuel that will permit them:

1. To bring water to a boil faster.

2. To use less water.

3. To cook overnight or long-time cooking of cereals.

4. To keep cooked foods hot.

5. To cook full top-of-range in one utensil.

6. To use less fat for frying.

7. To reduce shrinkage of meat while roasting.

8. To give steady, evenly distributed heat for perfect baking.

9. To give smoke proof, fire proof broiling.

10. To permit use of all cooking methods.

11. To give perfect results without change of customary cooking habits.

12. To permit use of present cooking utensils and not require purchase of special equipment.

Your fuel and cooking appliances meet these requirements and render these benefits — plus many more.

If you so far agree, will you further agree that the two humans must come together (seller and buyer) before a sale can be made? There are but two places that this can happen—either at the buyer's home—or in your store.

It is obvious that the values through demonstration, can best be demonstrated in front of a connected gas range.

I would like to give you my views

of how a range might be demonstrated. Let me combine with this point-of-sale demonstration some ideas and use of props that you may wish to combine with your demonstration.

### Demonstration

**Top Burner**

1. Kind and type of flame.
2. Flame spread.
3. Automatic lighting.
4. Speed in bringing water to a boil.
5. Demonstrate water action in glass utensil of full boil and simmer boil.
6. Demonstrate use and action of the "keep warm position" (if your range is so equipped).
7. Demonstrate burners, grates, cook tops, drip trays, special features, etc.

**Oven**

1. Oven capacity.
2. Racks.
3. Oven linings—rack stops—special designs, etc.
4. Insulation.
5. Circulation, fresh air, moisture controlled oven — vs. — the ordinary oven.
6. Oven design—venting, oven bottom, etc.

**Broiler**

1. Advantage of a broiler and broiled foods.
2. Relationship of broiler grid to pan.
3. Relationship of flame to food being broiled.
4. Proof of what makes a broiler smoke proof.

### Props You Can Use

**Top Burners**

1 Whistling teakettle
1 Flameware sauce pan and cover
1 Tea pot (earthenware)
1 Double boiler (pyrex, flameware)
1 Set of measuring cups
1 Vegetable tong
1 Paring knife
1 Large fork
1 Milk bottle
1 Paper plate
1 Coffee maker
1 Small sign (what keeps it boiling?)
Rubber balloons

**Oven**

1 Mirror
2 Cake pans
2 Cookie sheets

**Broiler**

1 Mirror
Bread
Matches
Cigarettes

### Store Demonstrations Promotions

1. Purpose.
2. Preparation and production.
3. Follow-up.

Store demonstrations and/or promotions can be designed to tie in with almost any season or event which could lend itself to such promotions.

**Purpose**

A. Promote store traffic.

B. Acquaint new customers with your store.

C. Create prospects.

D. Create sales ("buy now") incentive).

E. Further interest and knowledge in L. P. gas.

**Preparation and Production Discussion**

A. Set a date—determine length of

promotion. Avoid dates that conflict with other events.

B. Consult manufacturers and suppliers regarding assistance of manpower—also "specials", etc.

C. Arrange for local advertising—newspapers — theater — publicity — handbills (feature the "buy now" incentive).

D. Display of featured appliances.

E. General display—window (window trim built around featured appliances).

F. Conduct "live" demonstrations.

G. Demonstration suggestions.

H. Create interest—prizes—drawings, etc.

I. Employe meeting (acquaint with purpose — products — prices — models, etc.

J. Use of prospect cards.

**Follow-Up**

A. Screen all prospect cards and arrange for follow-up.

B. Add all new prospects to regular list for mailings.

C. Send a follow-up or "thank you" letter to each prospect.

D. Follow each prospect by direct mail—phone—personal call.

**Back To School Promotion**

1. Reason for program.
2. How it usually works.
3. How you can put it into action.
4. Follow-ups.

Each year thousands of girls are graduating from high schools and colleges. In most cases, each have had some experiences while at school, relating to the Home Economics Department.

All schools offering such a home economics course, must of course, have some type of cooking equipment.

Many schools are expanding this department or are adding such a course to their curriculum.

In addition to teaching preparations and methods of preparing foods, the course, usually includes instructions on the care and use of cooking equipment in use.

It is quite obvious, therefore, that it is not only to our best interests but also for that of the L. P. gas industry, to have modern up-to-date equipment installed in such schools and available for use by the students.

It is at this point of use, while at school, favorable or unfavorable, impressions of gas operated equipment are made. Here the student—who will be tomorrow's homemaker — should have the opportunity of becoming acquainted with modern gas appliances.

The one thing that should be of concern to you in this L. P. gas industry is the fact that too often the schools are equipped with a new up-to-date electric range. Should the school happen to have L. P. gas service, it is again often true, that the gas range or ranges are far out-of-date, obsolete, and certainly not modern.

It is your obligation, as an L. P. gas dealer, to see that each school in your area with a Home Economics Department, is provided with one or more, modern up-to-date good quality "CP" or automatic L. P. gas ranges. Only you, the dealer, can make it possible for the students to make fair comparisons and draw favorable conclusions toward your industry and your products.

Today's student is your tomorrow's prospect!

**How The Plan Works**

You must first agree that such a plan has merit. Second, you must make up your mind to do something about it.

There are many formulas and plans which a dealer can use in order to get

# Meet your new salesmen!

**On the left . . .** that's Mr. Four B. I., a protecting-type guy who guards A. O. Smith *Permaglas* Water Heaters against rust and corrosion with exclusive, effective four basic improvements.

**On the right . . .** that's Ruthless Rust, enemy of ordinary water heaters. He attacks and chews holes in them. Only a *Permaglas* with Four B. I. stops him.

**Both of these characters are salesmen for you, if you feature *Permaglas*.** Because they're selling *Permaglas* dramatically ***and definitely*** in advertising that reaches 40,000,000 homeowners.

**Take advantage** of these different and dynamic salesmen. Contact your nearest A. O. Smith distributor or mail the coupon...now!

**COST NO MORE** than ordinary water heaters.

**A.O.Smith**

PERMAGLAS HEATING PRODUCTS

**SALES:** Atlanta • Chicago 4 • Dallas 2 • Denver 2 Detroit 21 • Houston 2 • Los Angeles 22 • Midland 5, Texas • Milwaukee 8 • Minneapolis • New York 17 Philadelphia 3 • Pittsburgh 19 • San Francisco 4 Seattle 1 • Springfield, Mass. • Tulsa 3 Washington 6, D. C.

**SERVICE:** Chicago 17 • Dallas 1 • Los Angeles 13 Union, N. J. • International Division: Milwaukee 1 Licensee in Canada: John Inglis Co., Ltd.

A. O. Smith Corporation
Permaglas-Heating Division, Dept. SP-1152
Kankakee, Illinois

Send me your free Booklet "Murder in the Tank" and complete information on sales advantages of *Permaglas* Automatic Gas Water Heaters.

Name_____

Firm_____

Address_____

City_____ Zone_____ State_____

L. P. gas appliances and equipment into use in Home Economics Departments of schools.

Most gas range manufacturers have cooperative plans to assist you in effecting a workable program. Those manufacturers offering such cooperative plans, usually have available materials such as agreement forms, mailing brochures, etc. Consult your supplier of ranges and discuss with them their cooperative plan.

To get your program going, I would suggest:

1. Survey each school in your area.

2. Determine age, make, type and condition of all appliances used.

3. Determine type of fuel used, rates and supply.

4. Get the facts — number of students—if expansion is planned—forecast of future school plans, etc.

5. List names and addresses of all teaching personnel—directors and for all parties that may be concerned with the welfare of the school.

After such information is compiled, you can then decide on a plan of action.

Sales to schools should not be profit making ventures, for this is educational. You want the future homemakers to be prospects for gas fuel and gas appliances.

Schools that are supported in any way by Federal funds need not pay Federal Excise Tax on equipment that they purchase. The school purchasing, needs only to sign an exemption certificate, you pass that along to your manufacturer and the excise tax is not added to the cost of the ranges or other equipment purchased that would normally have an excise tax.

Many manufacturers, when appliances are to be used for school use, are willing to give a special discount on such equipment when purchased, where the dealer agrees to replace the equipment from time to time, and always keep it current and up-to-date.

After you have surveyed the schools and determined the need — contact your suppliers for the availability of your requirements, prices, etc. Also use any direct mail material and brochures explaining the plan that they might have to offer for your use. Mail this material to the school authorities and instructors.

Outline an agreement that can be concluded between your firm and the school, outlining terms of sale (approximately 50% of the retail price) enough to cover your costs—also outline your plan for replacing, free of charge, by a like model after one year and no longer than each three years.

Present your program to the school authorities, together with your customary sales story with a sincere effort to sell L. P. gas equipment for each school in your territory.

It is believed that the least you should expect from your school is to get your gas equipment in use, for 50% of their requirements.

Any school appliance that you have presently in use, should be replaced if they are over three years old so that they will be up-to-date. Any that you add should by all means be kept not only in the best possible operating condition, but should also be replaced periodically — not to exceed three years.

"Clock Controlled" and "CP" model ranges should be installed whenever possible—"keep your best foot forward" at all times.

Your service policy should at all times be such that school installations are checked from time to time throughout the year, particularly at the beginning of the year so that there is a complete understanding of operation and also assuring a completely safe operation.

# Buying A Business! Check Unpaid Taxes

By HAROLD J. ASHE
Tax Counselor

CONTRARY to popular belief, the purchaser of a liquefied gas distributorship is personally liable for various taxes incurred or collected by the seller, if the latter fails to discharge these obligations and such oversight is not caught in escrow. Going through escrow or publishing a notice of intended sale will not give the new owner clear title to the business so far as the previous owner's tax liabilities are concerned. Therefore, this bears watching when buying out a competitor.

It appears that various government taxing units and departments are not obliged to take official cognizance of notices of intention to sell. Neither are they required to follow such transactions or ferret them out with a view to protecting government tax claims before the sales are consummated.

The significant point: the government, state or federal, looks to the business, as distinct from the owner who incurred the tax obligations, if this becomes necessary to effect easy collection.

The foregoing position is well known in respect to property taxes and explains the use of responsible escrow agencies skilled in handling property tax delinquencies before a sale is completed. Possibly not every dealer knows that the purchaser of a business is liable for these taxes:

**(1) collected and unremitted sales taxes.**

**(2) social security and unemployment insurance taxes held by the seller.**

**(3) income tax withholdings collected by seller.**

**(4) the seller's contribution to social security and unemployment insurance taxes.**

The only safe course for a buyer to take in protecting himself against such tax bills incurred by his predecessor is to demand evidence such payments have been made. Moreover, evidence should be scrutinized carefully to make certain tax bills have been paid in full right down to the moment the new owner takes possession. There is a considerable time lag between the period for which such taxes are collected and the date of remitting.

At any given time, any going business is likely to be holding unremitted tax funds in varying amounts ranging from a few dollars up to thousands of dollars.

As an example of the government view on this mater, the Unemployment Insurance Act of one large state provides that "unless a Certificate of Release of Buyer is issued by this Department, the purchaser of a business may be come personally liable for any unpaid contributions, interest and penalties owed by the seller. A Certificate of Release can be issued only after the seller has filed all required returns and paid all

amounts of contributions, penalties and interest due."

The Department advises that "the purchase money should not be disbursed until a Certificate of Release has been issued by this Department. Publishing a notice of intended sale will not relieve you of your obligation in this respect." This is general practice elsewhere.

Frequently the fact that a dealer is delinquent in his taxes may be one of the contributing reasons which prompts him to sell his business. That is, he is going broke and he has been postponing tax payment for that reason. Thus, if a business that is for sale is known to be in financial difficulties, it is doubly important the buyer scrutinize tax liabilities carefully.

## Success of Service Schools Calls for More in Kentucky

The Kentucky L. P. Gas Assn., together with the state fire marshal, conducted their fall series of service schools in various cities throughout Kentucky during the month of October.

According to Frances L. Holliday, secretary of the Kentucky association, the first of the 13 sessions was held in Ashland and the series was concluded with a meeting in Burnside.

The principal subject covered was, "How Controls Work and How to Adjust and Service Them."

Because these service schools have proved to be very beneficial, the office of the Kentucky state fire marshal and the Kentucky L. P. Gas Assn., plan to continue them at regular intervals.

**Interest in service school instruction is evident in the facial expressions of this group of men who attended one of the schools held at Cumberland, Ky., by the Kentucky LPGA and the state fire marshal's office.**

# COLUMBIAN

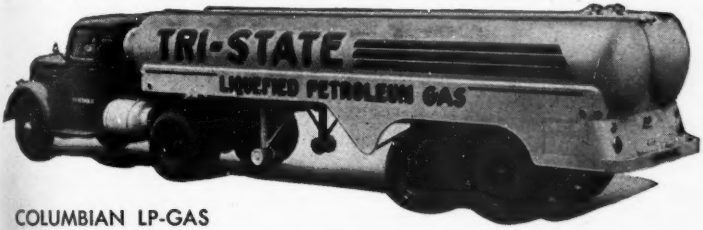
TANKS FOR THE WORLD

## BUTANE–PROPANE

**Transport Trucks • Semi-Trailers • Storage Tanks**

## COLUMBIAN "Frameless" SEMI-TRAILERS

like the 4,000-gal., double-barreled LPG Transport shown below are famous for their engineering excellence and exclusive Columbian construction features. That's why they always deliver more years of trouble-free, low-cost service. Manufactured in any capacity within limitations of your state highway regulations.




### COLUMBIAN LP-GAS Delivery Truck Tank

(Right) 1774 water gals. Twin-Barrel Propane Truck Tank. Two tanks, 42 inches diameter, 156 inches O.A.L. 1950 ASME code construction. 250 lbs. working pressure. Fully skirted; enclosed cabinets each side; sloping rear bucket box. 2-in. propane pump, 1¼-in. printometer. Necessary valves, fittings, and hose. 4-way pumping system. Mounted on your truck for driveaway delivery.

### COLUMBIAN Storage Tanks

(Left) Above-ground and under ground storage tanks that are quality built for long years of efficient operation. Available in all sizes. All ASME tanks.

## COLUMBIAN STEEL TANK CO.

P. O. Box 4048-C
Kansas City, Mo.

# PRODUCTS

## Internal Safety Relief Valve

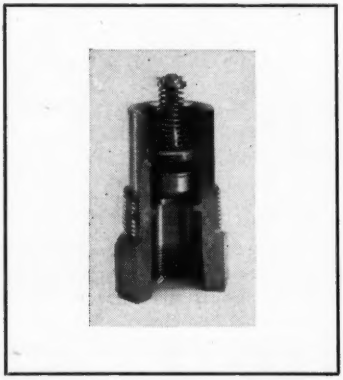
SELWYN-LANDERS CO.
4709 E. Washington Blvd., Los Angeles 22.

**Model: SL-445M—1 in. Tank Connection—DxU 10.**
**SL-445M—1¼ in. Tank Connection—DxU 16.**

**Application:** For use in mobile and domestic tanks where there is possibility of damage to an external valve from contact with outside objects.

**Description:** Valve is designed with all functioning parts located within the shell of the tank, so no recessing is necessary. Made in two sizes, to insert in tanks threaded for 1 in. and 1¼ in. safety relief valve bodies.

This valve is available with pressure settings of 200, 225, and 250 lbs. and is orifice threaded to connect pipe for transferring discharged vapors to a safe location.



## Automotive Shock Valve

GENERAL CONTROLS CO.
801 Allen Ave., Glendale, Calif.

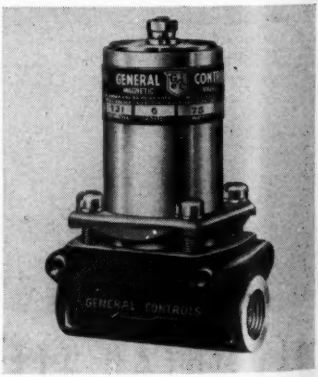
**Model: PVI-C**

**Application:** Designed to overcome the problems of shock and vibration in mobile equipment.

**Description:** This new automatic valve Model PVI-C, brings to the field of automobiles, trucks, tractors and other mobile equipment the advantages of the General Controls "hi-g" line of aircraft controls. It has been constructed to overcome the problem of valve inadequacies under various types of stress and strain conditions.

Model PVI-C is of the normally open or closed, shutoff type, having a soft seat to insure tight shutoff and can be obtained in ¼ in. pipe size for butane. It is designed for pressures up to 300 psi. and is made for 6, 12, and 24 volt systems.

The company also has this type of valve for refrigeration use.



## Tube Bender

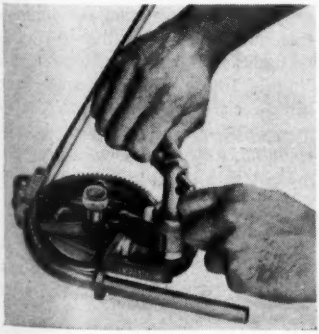
IMPERIAL BRASS MANUFACTURING CO.
1200 W. Harrison St., Chicago

### Model: No. 270-F

**Description:** This compact, sturdy, gear-type bender will bend any type of tubing, including hard drawn copper, hard temper steel, aluminum and brass. It is constructed so that it may be positioned on the tube at any point where a bend is desired, thus bends can be made even when one end of the tube is connected. The bender can be used to make right or left hand bends, return bends, offset bends and right angle bends.

The high gear ratio enables hard temper tubing or large size tubing to be bent easily. The bender is designed so that it can be held by hand, clamped in a vise or bolted to a bench. An extension handle can be obtained which permits holding the bender in a pipe vise.

A separate bender is used for each size of tubing and benders are available for tubing from ⅜ in. to 1⅛ in. outside diameter.



## Tractor Fuel Tank

AMERICAN TANK AND MANUFACTURING CO.
423 South Industrial Blvd., Dallas

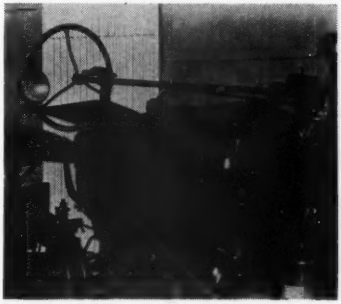
### Model: Farmall "M" Tractor Tank

**Application:** For replacement of original-equipment gasoline tank on Farmall "M."

**Description:** This newly designed 32-water-gallon capacity tank is produced from high quality materials and it is welded by experienced ASME Code welders.

One of the features of the tank's construction is the use of a new crimping method in assembly before welding to eliminate moisture collection points inside the tank and for increasing its strength. The liquid line dip-tube is fabricated from steel and braced at the top by struts to avoid crystallization and breakage.

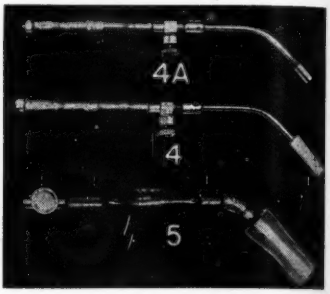
The tank can be easily mounted under the steering shaft of the tractor and its installation does not require any tractor brackets to be cut or altered.



## Torches

MUTUAL LIQUID GAS EQUIPMENT CO.
Inglewood, Calif.

### Model: 4-A, 4, 5




**Description:** Model No. 4-A features a small, pointed flame designed to throw concentrated heat into restricted small areas. It is ideal for lead burning, light brazing, soldering and similar tasks. Model No. 4 has a broad flame intended especially for wiping joints, heating and sweating large copper fittings, melting compounds from electrical construction equipment, etc.

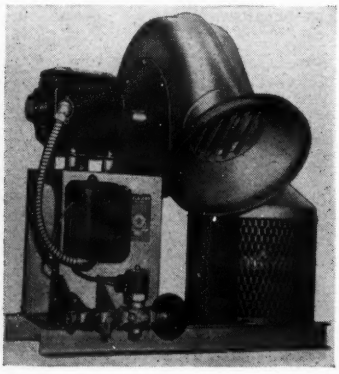
The No. 5 blow torch will develop about 2400° F and has been engineered for preheating and melting. Some of the features of this torch include a cast iron burner tube, a cool-grip handle made of a special material and instant flame control, operated with a wheel-type needle valve handle. It is recommended particularly for preheating compound joints, line shaft and pulleys for heavy welded jobs.

## Blower-Type Heater

KILBURY MANUFACTURING CO.
Lawndale, Calif.

### Model: Kilbury Homogenator

**Description:** This new line of blower-type heaters has been redesigned for improved combustion efficiency, greater safety and more streamlined appearance. A basic model for suspended use and console models for floor and suspended use have 50,000 Btu input and output capacities. Combustion efficiency is obtained by burning gas with induced air draft and a secondary cone over the burner for stabilizing the gas flame. Some additional features include: 100% pilot shutoff valve, limit control switch to shut off gas in case of stalled motor or defective solenoid, and remote wall-type thermostat to eliminate overheating and vitiation of room air.



Natural gas and L. P. gas-air mixture of proper input rating and pressure can be used on the same burner without changing the orifice or pilot.

# Assured Supply!

***Our contract customers have this assurance of continuous Propane supply...***

**It is Shell's long-established policy to sell Propane only within the company's capacity to produce and deliver.**

**SHELL OIL COMPANY**

Atlanta • Baltimore • Chicago • Cleveland • Detroit • Indianapolis
Los Angeles • Minneapolis • New York • Portland, Oregon
Sacramento • St. Louis • San Francisco • Seattle

SHELL

## Domestic Range

DIXIE FOUNDRY CO., INC.
Cleveland, Tenn.

### Model: Wanderer

**Application:** Designed especially for small homes and kitchenette apartment installations, where maximum cooking facilities must be provided in a minimum amount of floor space.
**Description:** This unit measures 54 in. high, 24 in. deep and 20 in. wide. The acid, stain and scratch resistant porcelain enamel finish for both exterior and interior surfaces makes cleaning a simple, damp-cloth operation.

A non-glare fluorescent backguard light and a special oven light provide maximum illumination and the electric clock plus twin electric convenience outlets complete the functional aspect of the backguard.

Other features include safety-locking burner controls, a safety valve which automatically shuts off gas to oven burner in case of pilot failure, and a dual pane oven window.

## Salamander

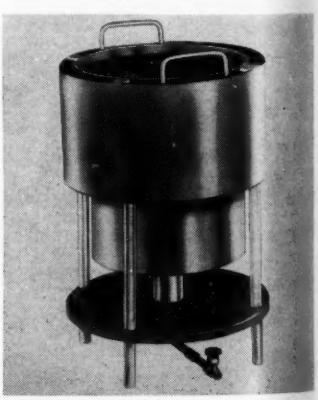
GOSS GAS, INC.
Glenshaw, Pa.

### Model: 126

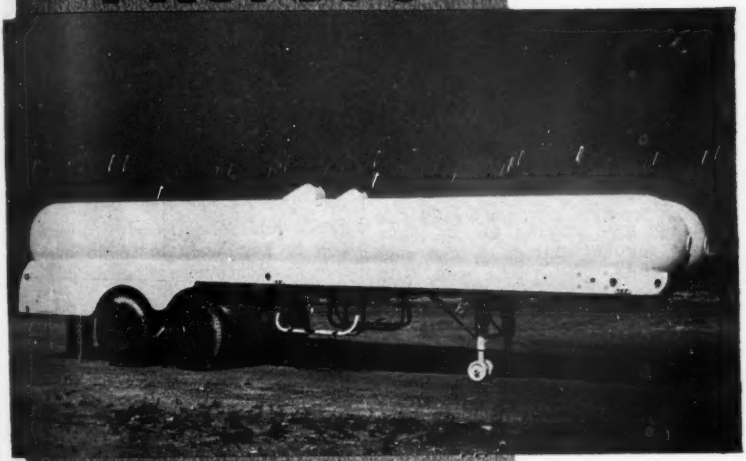
**Description:** This model has a 14-in. diameter, a height of 22½ in., weighs 26 lbs. and features heavy gauge construction. It has been increased in capacity from 50,000 to 86,000 Btu's.

According to the manufacturer, with this equipment there is no smoke, no fumes, no soot, no preheating, no pumping, no carbon. It produces instant heat, has simple control, is easy to service, and the gas supply cylinder can be changed in three minutes.

Available as accessories are a 10-ft. hose, a 6-ft. hose, and an adaptor, supply cylinder to hose.



# BACK UP TO PROFITS



## HOOK ON TO THIS MONEY-MAKING LMC TRANSPORT

You're out in front in the race for greater profits when your truck is pulling this streamlined LMC Tank Trailer. Like all LMC units it's designed and constructed for greater safety, longer life, and LOW-HAUL-COST-PER-MILE.

High tensile steel and indented fittings assure a superior safety factor; light weight, low center of gravity, large capacity pumps and valves allow you higher payloads.

BUY ON THE LMC BUDGET PLAN

The LMC twin-barrel is available in capacities from 3000 to 6000 gallons. For transports or home delivery units, remember LMC means Low Mileage Cost.

LMC

Lubbock Machine & Supply Co.

BOX 1138
PHONE 3-4631
LUBBOCK, TEXAS

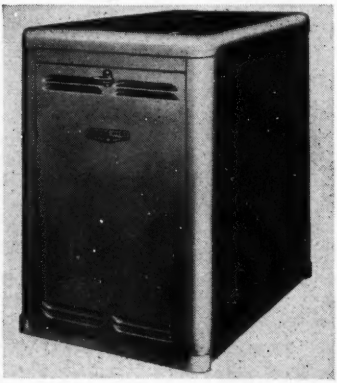
## Boiler

NORGE HEAT DIV., BORG-WARNER CORP.
Kalamazoo, Mich.

### Model: Sizes GB2, GB2.5, GB4

**Description:** These new series range in size from 62,000 to 2,380,000 Btu's. The smaller series GB2 boilers are available for hot water heating and are shipped assembled from the factory with the controls, housing and burners all in place ready for connecting to gas and water lines. The GB2.5 and GB4 series can be used with any steam, hot water or vapor system.

These AGA approved boilers are equipped with fully automatic controls which are centrally grouped to facilitate easy inspection. The cast iron fins on both sides of sections offer maximum heating surface to the upward flow of hot gases. They stagger the hot combustion gases and impart a scrubbing action to the gases, forcing them in close contact with the entire heating surface.



## Product Information

**Dix Manufacturing Co.**, Los Angeles, has been appointed distributors of Hellwig spring stabilizers for the LPG industry.

R. W. "Dick" Adair, head of the Dix Manufacturing Co., advises that Hellwig spring stabilizers are being used on many highway patrol, police, fire, government and private emergency vehicles as a safety precaution and to help keep both old and new cars in continuous operation.

**Cribben & Sexton Co.**, Chicago, Ill., has announced that its "Wheelabout" model, the Universal range which incorporates a mobile storage cart topped with removable cutting board, is now available with clock control.

The storage cart can be wheeled out of the front half of the range, which is conventionally provided with bins or drawers, and serves as a step-saver in the large kitchen and as an extra work table in the small kitchen. It completely disappears when not in use.

A new diaphragm valve that is interchangeable with standard solenoids and operates on all gases is announced by **Minneapolis-Honeywell Regulator Co.**

Cast aluminum body and housing, larger pilot passageways and a three-ply diaphragm using a nylon interior sandwiched between the same Buna-N rubber that goes into the firm's well known aircraft fuel gauge are features that were built into the new valve to minimize servicing.

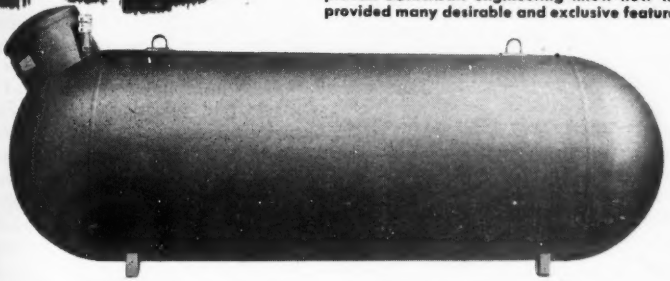
The control is available in a variety of models, sizes and voltages. The

# NOW AVAILABLE

# New BURNHAM'S

## END MOUNT TANK

**This new tank will meet with your instant approval. BURNHAM engineering know-how has provided many desirable and exclusive features.**



- **QUALITY** – Burnham quality and construction go substantially beyond ASME requirements.
- **SAFETY** – Newly designed Burnham lifting lugs will carry 20 times weight of system. (U.S. Testing Laboratory report)
- **SERVICE** – Eduction and fill pipe is screwed into multi-valve for easy removal to clean or replace.
- **PROTECTION** – Rigid collar welded to tank safeguards controls and provides complete accessibility.
- **GUARANTEE** – All Burnham Tanks are registered with the National Board.
- **DRY TANKS** – Moisture-free – completely dehydrated.

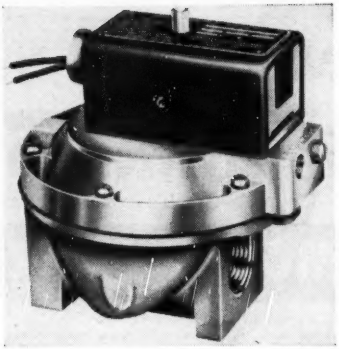
**ALSO COMPLETE LINE OF ANHYDROUS AMMONIA AND TRUCK TANKS**

# BURNHAM LPG TANKS

**17 STANDARD SYST[illegible] GALLONS**

*Burnham Corporation*

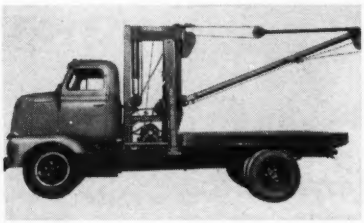
**TANK DIVISION** **IRVINGTON, NEW YORK**



V499 is adapted for A.C. or D.C. line voltage, while the V899 is designed for low A.C. voltage. Both of these are offered in three models, in five sizes ranging from ¾ inch to 2 inches. They provide a choice of manual opener, no manual opener or manual opener with automatic recycling.

The compactness of the control allows it to fit into smaller spaces than regular size valves, yet it equals them in capacity and performance, according to the company. It meets all local codes and gas utility requirements for all gases.

**The Pitman Manufacturing Co.**, Kansas City, Mo., now has in production a new model of the Pitman



Hydra-Life, a recently-developed crane with hydraulically-powered boom that can be mounted on the frame of any truck, 1½ tons or larger. This new crane, Model "B," requires only 40 in. behind the cab of a truck, has a loadline capacity of 6400 lbs. and a swinging boom which telescopes from 12 to 17 to 22 ft.

The two chief improvements are a big increase in the unit's safety margin and the fact that it now is shipped almost completely pre-assembled, thus cutting the time and cost of installation. The safety margin places less strain on the crane when any given load is picked up. It was accomplished by raising the point on the crane's mast where the topping cable is anchored about 18 in.

Other improvements of Model "B" include the addition of a bail bar on the topping cable; replacement of the old hammerhead boom-tip casting with a new casting of swivel design; and lever controls, rather than the push-pull type.

## Catalogs

A new 20-page general catalog, No. GN-52, has been prepared by **Reznor Manufacturing Co.**, Mercer, Pa.

This catalog covers four basic Reznor units and discusses the merits of each in detail. Selection from the four types will provide efficient heating for commercial, industrial, institutional buildings and residences.

These models include the suspended gas unit heater, unit type gas room heaters, unit central gas heaters, and gas duct furnaces.

A new radiator heating catalog has been released by **American Radiator & Standard Sanitary Corp.**, Pittsburgh, Penn., which brings to the contractor, wholesaler, architect and

builder everything he wants to know about the company's complete line of wet heat equipment.

Illustrated with portrait and cutaway views of products and dimensional drawings, this new book, Catalog R52, contains full ratings, technical data and dimensions of all radiator heating equipment made by the firm. No other book or literature is required for selecting, sizing, ordering or specifying equipment for a wet heat installation.

To show present and prospective customers the merits of metering L. P. gas, and thus to help the dealer sell such installations, is the purpose of a small folder recently prepared by **Rockwell Manufacturing Co.**

It so completely tells the advantages of using meters that little sales effort should be needed to convince users. Dealers can get any quantity of these with their own names imprinted instead of the Rockwell name for $4.25 per thousand by writing to the American Offset Corp., 1239 West Madison St., Chicago 7, Ill.

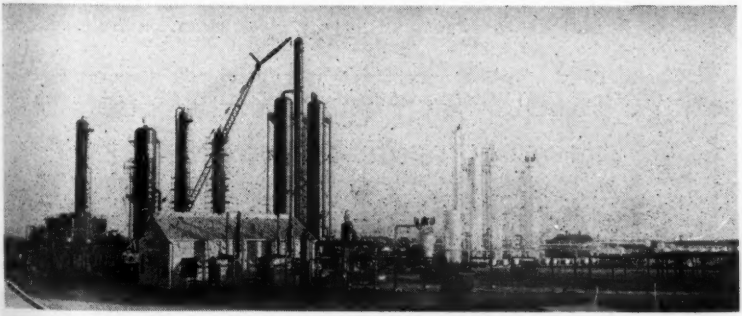
## New Stano Kansas Plant Triples Daily Gas Production

The Stano gasoline plant of Stanolind Oil and Gas Co., near Ulysses, Kan., has begun operation on an expanded basis which will nearly triple capacity of the original plant, begun operating in 1949 with a capacity of 125,000,000 cu. ft. of gas per day. New facilities will make it possible to process 325,000,000 cu. ft. of gas in every 24-hour period.

The expanded plant will include producing capacities of 75,300 gals. of propane, 55,780 gals. of normal butane and 26,955 gals. of iso-butane daily.

An enlarged storage capacity will include storage of 340,000 gals. of propane, 420,000 gals. of normal butane and 150,000 gals. of iso-butane.

New loading rack facilities will make possible the loading of 40 tank cars and four tank trucks simultaneously, compared with only 12 tank cars and one tank truck previously. The Stano plant will have the largest gas processing capacity of 13 plants which the company operates in the mid-continent area.



View of recompression area and west side of new process area of the Stano gasoline plant near Ulysses, Kan.

## CITIES FUEL RE-ORDERS
## SUPERIOR INTEGRAL TANK-TRAILERS

**Bill Timmings,** president of Cities Fuel of Fresno, California, has been among the first to re-order this new type unit that eliminates the frame and has the axles, wheels and springs attached directly to the ends of the tank.

**This** notable advancement has been specifically designed by SUPERIOR for use in California and the entire West Coast. SUPERIOR INTEGRAL gives a bigger payload with less operating cost by providing at least 160 more payload gallons with the elimination of 700 to 1100 pounds of excess dead weight. An 8 to 10 inch lowered center of gravity gives easier handling and towing characteristics.

Operators up and down the Coast, and inland, too, are ordering SUPERIOR INTEGRALS to replace outmoded equipment. In order to serve YOU promptly we have—

### EXPANDED PRODUCTION CAPACITY

*Consult us today! See how SUPERIOR INTEGRAL will increase efficiency and make money for you day after day and year after year. Call on our engineering department for preliminary designs and estimates at no cost to you. But act TODAY—while we still have critical materials.*

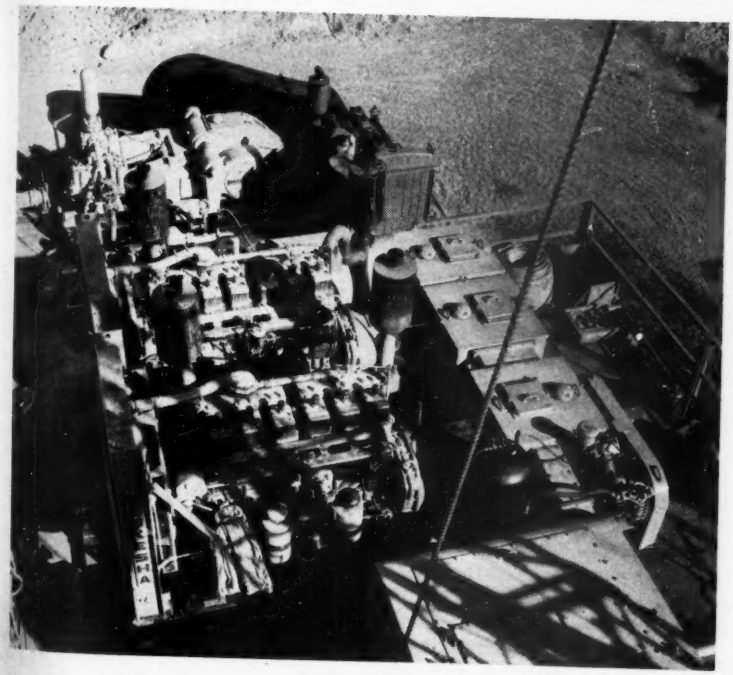
SUPERIOR TANK and CONSTRUCTION CO

**SUPERIOR TANK AND CONSTRUCTION COMPANY**

6155 SO. EASTERN AVE. • LOS ANGELES 22, CALIF. • Phone: UNderhill 0-1151

# Butane-Propane POWER SECTION

Installations / CARBURETION / Conversions



...ing propane gas for fuel, provide power for ... operation. In background is a 500-hp. Waukesha engine driving a mud pump.

# Safety Facts for Fuel Transfer The Customer Should Know

A question which arises in connection with every tractor conversion is, "How am I going to fill my fuel tank?" Most farmers will fill their tractor tanks from a domestic fuel system. Usually these domestic tanks are designed for vapor withdrawal, and while they can all be adapted to liquid withdrawal, the mere substitution of a different kind of valve and an internal dip tube is not always the whole answer.

Many solutions to this problem have been proposed, but not all have provisions for greatest safety, which should be of first consideration, states Don H. Krug, of D. H. Krug Co., Madison, S. D.

**Operation Is Standard**

In principle, the transfer of fuel from a domestic tank to a tractor or vehicle tank is the same as the filling of a bulk delivery tank from a bulk storage plant. The fuel will flow into the tank to be filled (1) if it is forced under pressure, or (2) if the pressure in the tank to be filled is sufficiently below that of the supply tank.

The first method requires a pump. It is positive and dependable. The second method may be accomplished by (1) increasing the pressure from the supply tank by adding the force of gravity (elevating the tank); or (2) by reducing the pressure in the tank to be filled. This latter may be done by lowering the temperature of the vehicle or tractor tank or by allowing pressure to escape as filling takes place.

**Factors to Consider**

Obviously, there may be times when any method except pumping will run into difficulties. Keeping an installation sold is easier if everything works as it should at all times, so it is well to analyze the various methods of fueling that have been proposed in the light of the available equipment and the conditions. There are three factors which are important: (1) The farmer wants to be sure that he can fill his tank at any time; (2) he cannot afford to waste time waiting for the tank to fill by a slow method; (3) the operation must be kept safe by preventing the escape of fuel.

Filling by gravity has often been recommended. There is no problem with the storage tank elevated to a height considerably above the

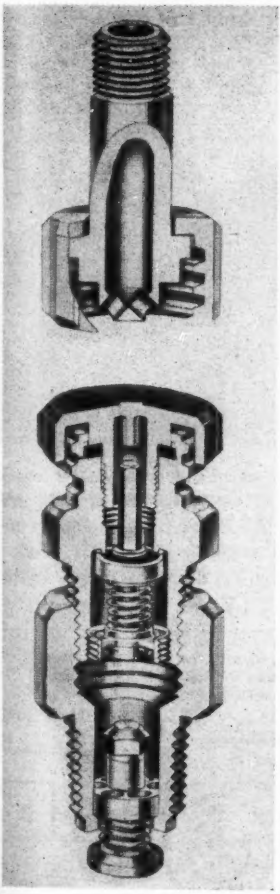


Fig. 1. Above, the adapter for the vapor return line. Below, back check and excess flow valve, through which pressure between storage tank and vehicle tank may be equalized. (Bastian-Blessing Co.)

tractor tank, a hose connecting an outlet at the bottom of the tank with the tractor filler valve, and using a vapor return line with adapters at both ends to open the check valves. Filling is quick and positive. With this setup, the vapor return valves must be fitted with "back check and excess flow check valves" instead of double check valves, as the adapter will not open a double check valve. (Fig. 1).

Even with higher pressure in the tractor tank than in the supply tank, it takes only a moment for the pressure to equalize through the vapor return hose, after which filling proceeds. The trouble is that most domestic tanks do not have a bottom outlet. The liquid fuel must be withdrawn through an outlet valve (or adapter) placed high up on the tank, and in many cases it is right at the top.

### Temperature Has Influence

The outlet line must act as a siphon if the liquid level in the tank is below its highest point. It requires a lower pressure in the tractor tank than in the supply tank to draw the liquid fuel over the high part of the siphon. Flow will take place if the vehicle tank is materially colder than the fuel in the supply tank, but the flow will slow down and may stop entirely as the temperatures equalize due to the transfer of fuel. Or the pressure in the tractor tank may be reduced by opening a vapor valve and allowing gas to escape. This is unsafe, and should never be done. Experience shows that siphoning from an elevated tank

Fig. 2. Lever-operated hand pump filling tractor tank from bottom outlet of domestic storage tank. The vapor line (connected inside tank collar) makes pumping easier and faster. (D. H. Krug Co.)

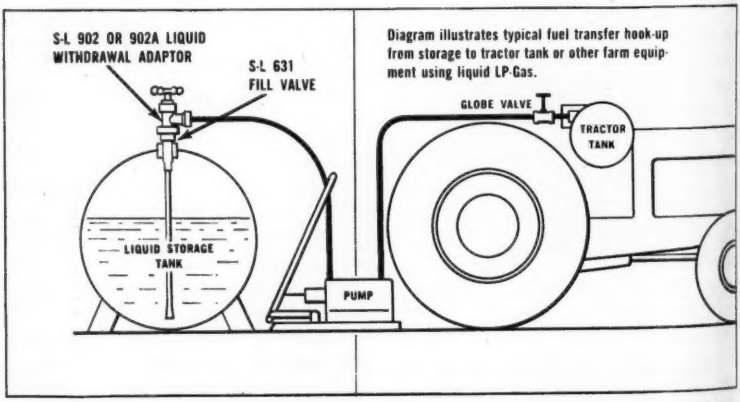

S-L 902 OR 902A LIQUID WITHDRAWAL ADAPTOR
S-L 631 FILL VALVE
Diagram illustrates typical fuel transfer hook-up from storage to tractor tank or other farm equipment using liquid LP-Gas.
GLOBE VALVE
TRACTOR TANK
LIQUID STORAGE TANK
PUMP

Fig 3. A liquid withdrawal adapter connected to filler valve permits fueling of tractor and vehicle tanks from domestic storage systems having no bottom outlet. The filler valve must have a dip tube to bring up liquid instead of vapor. (Selwyn-Landers Co.)

is satisfactory at some times but decidedly unsatisfactory at other times.

It is often recommended that the tractor tank should be filled immediately after the engine has been working, so vaporization will have reduced tank temperature and pressure to the point where the desirable pressure differential is established. This generally works fairly well in a vapor withdrawal system, although it may be rather slow. Tanks for liquid withdrawal carburetion systems on tractors are most frequently mounted where they absorb heat from the engine, and the tractor tank is likely to have higher temperature and pressure than the supply tank. Releasing this pressure to atmosphere to permit gravity flow would again cause the escape of a hazardous amount of fuel vapor.

### One Method to Avoid

The recommendation has also been frequently made that the tractor tank pressure should be reduced by opening up the rotary gauge bleed hole and the 10% valve. When these are opened enough to relieve pressure, gas can escape in large amounts. For safety reasons, these valves should never be opened more than just enough to show *visibly* when the liquid reaches the level of the opening.

The hazard produced by escaping L. P. gas is covered in NBFU Pamphlet 58, which states: "Gas or liquid shall not be vented to atmosphere to assist in transferring contents of one container to another." (Par. B.12 (c) 1951 Edition.) This precaution is observed at the refineries, at bulk plants, and when customers' storage tanks are filled. In all these operations, pumps are employed so the systems may be kept closed. It should also be noted that Pamphlet 58 states, "Any container used in domestic or commercial service, where transfer of liquid is made from such containers into portable containers such as on tractors, skid tanks, or similar applications, shall be located not less than 50 feet from the nearest important building." (B.5f.) Few farmers have ever read Pamphlet 58, but they should be fully instructed regarding fuel transfer and use in order to observe proper safety precautions.

### Farm Uses For Hand Pumps

The use of a suitable pump assures quick, positive, and safe filling of tractor and vehicle tanks from a domestic storage system, regardless of its elevation, and by either the bottom outlet or the siphon type connection. When many units are to be fueled, there are several electrically operated pumps that are available. For the majority of farm applications, the hand operated pump will be valuable, as it provides all advantages of pump operation at minimum cost. These are available either in the lever action positive displacement type (Fig. 2, or in the crank operated gear pump style. With either type of hand pump, the liquid withdrawal adapter such as is shown in Fig. 3, is necessary if the customer's tank does not have a bottom outlet.

**Converted tractor undergoes its final test on the dynamometer, preparatory to going to work in the field.**

# Unique Tractor Service Helps Dealers In Minnesota and the Dakotas

By CARL ABELL

CUSTOMERS come from distances as great as 200 miles, bringing their tractors on trucks, to have them converted, tuned up, or overhauled by Leroy Goos, of Pipestone, Minn. He has taken the problems of tractor conversion off the shoulders of several L. P. gas distributors in the surrounding counties. He has become an institution in the tractor industry of that part of the world, particularly since the wave of conversion to propane hit Minnesota and the Dakotas.

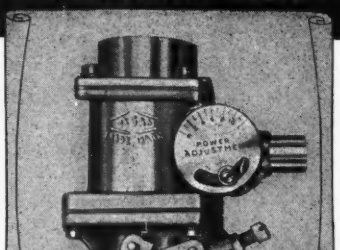
Mr. Goos achieved that standing under a considerable handicap, as he is in braces from the hips down as the result of an attack of polio during his early years. While he gets around with a cane, it is not easy, and for practical purposes it is necessary for him to do his work with the least possible movement. The jobs must come to him, and he must complete the work in his own shop, including the last final touches which determine the degree of power and economy that the owner obtains from the engine.

The basis of LeRoy's reputation is his almost uncanny ability to make each engine accomplish that very end. He has loved engines ever since he was a boy, and all of his working years have been devoted to making them "do their stuff." Most of these years he spent working as a tune-up specialist, and overhauling carburetors, ignition systems, and magnetos, for a firm in Sioux Falls, S.D. It was the kind of work he liked, but he needed more money than his mechanic's wages, and he wanted to be his own boss. For a long time he did not see how it could be done, but the way became clear when he saw a chassis dynamometer at a tune-up demonstration.

In Pipestone, a county seat town of about 5000 population, he owned a house and lot. There was enough room on the back of the lot to erect a 20 x 30 ft. garage building. This would provide space for the chassis dynamometer and two working stalls, plus the necessary equipment and work benches. He got his building erected, instaled the dynamometer and equipment, and opened for business as a precision tune-up specialist.

Building the business in the customary way, by soliciting patronage from individuals, would have required quite a lot of time, and put him in competition with every car, truck or tractor agency, and independent garage in town. While he was confident that he could make the grade in time, it seemed better

IMPROVED ENGINEERING AND ADVANCED DESIGN




Brings Greater Flexibility to ALGAS Carburetors

Pioneers in the LP-Gas Industry, ALGAS. is constantly improving their equipment to serve better the expanding needs of their field. Now ALGAS offers a new, improved design in their 1400 Series Mixers that greatly expands the flexibility of installation. Write today for information and specifications.

ALGAS
Specializes in Everything for Butane-Propane Industry • • • •

CARBURETION AND CONVERSION EQPMT
•
SERVICE STATIONS
•
STAND-BY PLANTS
•
FUEL DISTRIBUTION

AMERICAN LIQUID GAS CORPORATION
1109 Santa Fe Avenue
Los Angeles 21, California

to work with the existing service shops instead of against them.

He had the only chassis dynamometer in that part of the country, and could handle problems which were beyond the range of equipment of any of the other shops. Why not make arrangements to handle their problem cases, and to diagnose, tune, and recheck engines for those shops that were short of equipment or skilled man-power? There seemed to be a critical need for this kind of service at that time, as many of the best mechanics who normally worked in the other shops were in the armed forces.

### Solves Testing Problem

It soon developed that the shops which needed his help most urgently were the tractor shops. This posed a tough problem, as the rough tractor tire treads and the low speed of the wheels made the testing difficult, and did not give the accuracy of results that was desired. It seemed better to drive the dynamometer from the power-take-off of the tractor engine by means of a belt passing around the dynamometer rollers. To make this practical, it was necessary to equip the dynamometer with an idler roller which would keep the belt from dragging against the floor plate of the dynamometer bed, and to provide a means of anchoring the tractor so tension could be maintained on the belt. With the help of J. D. Arden, field service school instructor of Clayton Manufacturing Co., builders of the dynamometer, these details were

worked out. In order to permit a quick change from the tractor to the truck and automobile set-up, which were sometimes necessary, the base of the idler roller was made with quick-detachable screw clamps holding it to the floor plates.

That was the beginning of a unique business—testing and tuning up tractor engines, on a service basis, with the precision of a laboratory operation. With the dynamometer it is possible to diagnose engine conditions accurately under every possible variation of power, and duplicating every field condition, without moving the tractor out of the shop. All guess work is taken out of the final tune-up adjustments, because the engine is made to perform at any desired power output while the adjustments are made in accordance with the readings of instruments showing the power and air-fuel-ratio. When the tune-up is completed in the shop, the tractor is ready to use in the field.

### LPG Conversions Brought Success

The coming of L. P. gas conversions really put the business on its feet. Changing the compression ratio of an engine changes the setting of the ignition timing, and the correct firing point must be determined by test. There is no quick and easy "rule-of-thumb" method. It is generally done by pulling implements in a field, but this consumes a great deal of time.

The ignition requirements of the converted engine are also more critical than with gasoline, partly because the compression ratio has been increased, and partly because it takes a hotter spark to fire the propane. The dynamometer reveals any weakness of the ignition system, and gives confirmation when corrections have been made, by proving the steady firing under load. The carburetor adjustments may also be made for maximum power and economy, at both full and partial loads, without the time-consuming field tests which are generally used.

### Is Big Help to Dealers

Such an installation, with the necessary highly skilled help to make it effective, is beyond the reach of the average tractor agency, and certainly outside the scope of the majority of L. P. gas distributor-dealers operating their own tractor conversion shops. But the Leroy Goos dynamometer service is available to do the work for all of these businesses in the area surrounding Pipestone.

Several of the gas dealers who sell tractor conversions turn the whole mechanical operation over to Mr. Goos. It is less expensive to transport the tractor quite a few miles than to install a shop for an occasional conversion, and then keep a skilled mechanic on the payroll to do the work. And the results are accurate, efficient, and dependable. This accounts for many of the cases in which tractors come from far away for conversion and tune-up in the Goos tractor power laboratory.

Clyde McKinnon is proud of his propane-powered International's record in hauling logs.

## Oregon Log Truck Makes Money by Using Propane

The first of the new International factory - equipped, propane - burning trucks is marking up quite a record hauling longs out of the woods of Oregon. Equipped with the 405-cubic inch engine, dual axle drive, and a semi-trailer, this truck is hauling loads approximating the legal limit of 72,000 lbs. at speeds ranging up to 50 miles per hour. The haul originates on dirt roads far up in the woods, then over rock-surfaced, secondary roads with plenty of steep up-and-down grades, and ends on paved state highways going into Sweet Home and Lebanon.

The owner, Clyde McKinnon, points with pride to the fact that he has enough power and speed to make four round trips between the woods and the mills per day, while other operators using the gasoline version of this same truck model can only make three trips, within the limits of the working days in the woods and at the mills.

On account of the extra trip per day, McKinnon's revenue is increased one third. Truck mileage is also increased one third, but the overhead items — insurance, interest on investment, storage, etc. remain constant. If the truck were driven by a hired driver, instead of by the owner, the driver cost would likewise be a constant figure. Either way, the net profit increases more than one third. A little extra power is often a very good investment.

## Tooley's Truck Terminal Serves Propane to Trucks

Tooley's Truck Terminal on U.S. Route 1, Jersey City, N.J. has been granted a permit by the New Jersey state police to dispense propane to trucks.

Three tanks, each with a capacity of 500 gallons, or 1500 gallons in all, have been set up aboveground with metered pumps.

"We noted an increasing number of requests for propane gas service," reports Mr. Tooley, "and decided to put in this installation besides our normal service of regular high test gas, and diesel fuels."

Tooley's maintains diversified accomodations for truckmen, including sleeping quarters, recreation room, clothing store, garage and maintainance repairs.

## UL Approves Oliver Industrial Engine Conversion Kits

The August supplement to the Underwriters' Laboratories approved list includes the following conversion kits, for outdoor installation of Oliver stationary industrial engines:

Model 166, Package No. 7-LSB-1920.
Model 177, Package No. 7MSB-1920.
Model 188, Package No. 7KSB-1920.

The stationary internal combustion engine with L. P. gas fuel system is for outdoor installation. Fuel supply and storage container, not furnished with conversion kit, should conform to NBFU Standards, Pamphlet No. 58.

The above engines are adaptations of the standard Oliver tractor engines, which use the same conversion parts, plus the special tractor tank and fuel lines.

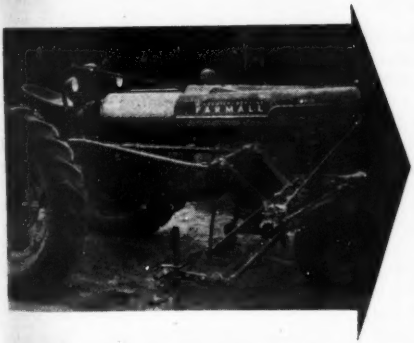




Photo shows a Manchester US-H type tank installed on an International Farmall H tractor. Advantages of this new tank over previous models: Tank has a bracket welded to the front which replaces the existing gas tank bracket. Previously it was necessary to cut off part of the gasoline bracket to install this type of tank—with the new Manchester US-H and US-M tanks you simply remove the gasoline bracket and bolt the L.P. Gas tank in place. All brackets for tractor air cleaner and steeringrod bearing are a part of the L.P. Gas tank itself. This type of tank is available for either the Farmall H or Farmall M tractor. The H tank has 22 gals. and the M has 27 gals. capacity.

All valves are UL approved and conform to all industry standards. Custom designed Manchester tanks with suitable mounting brackets are available for all makes and models of trucks and tractors.

Write for educational brochure covering LPG conversion on automotive equipment and tractors.

Bonded and Approved in States where required.

MANCHESTER
WELDING & FABRICATING CO.
2880 Norton Ave., Lynwood, Cal.
Phones: NE 1-9357 NE 6-2839

HERMAN MERKER

Herman Merker, president of **Pressed Steel Tank Co.**, Milwaukee, and Penrose M. Davis, president of **Downingtown Iron Works, Inc.**, Downington, Pa., have issued a joint statement announcing the merger of the interests of the two companies through the acquisition by Pressed Steel Tank Co. of all the outstanding capital stock of Downingtown Iron Works.

Downingtown Iron Works retains its existing corporate structure, and will be operated as a division of Pressed Steel Tank Co. No changes in management or personnel are contemplated.

The products of both companies are widely used by the L. P. gas industry. Pressed Steel Tank produces the complete line of Hackney L. P. gas ICC cylinders in sizes from 5 to 420 lbs. capacity (propane) and Hackney L. P. gas fuel tanks for tractors, trucks and busses.

The Downingtown Iron Works Division produces L. P. gas truck tanks, and propane storage tanks in nine sizes from 1300 to 30,000 gallons gross capacity and other pressure vessels in larger sizes, including oil refining pressure vessels and anhydrous ammonia storage tanks.

The various product sales from **Sunray Oil Corp.**'s refineries and gasoline plants have been consolidated into a sales division of the company's manufacturing, sales, and pipe line department, according to H. W. Manley, vice president in charge.

P. M. Broach has been named assistant manager in charge of crude oil purchases, sales, and exchanges in Sunray's sales division, headed by A. V. Murray. W. H. Carruth has been made assistant manager in charge of pipe line product sales. Carl A. Lemon is assistant manager in charge of tank car product sales, and P. C. Walter, assistant manager in charge of liquefied petroleum gas and special naphtha solvent sales.

Bob L. Roberts has been named chief clerk in the order and distribution section of the sales division.

Sunray's traffic section which serves all units of the sales division is headed by S. G. Barrington, manager, and J. D. Dunning, Jr., is assistant traffic manager.

J. H. Brinker has been appointed assistant executive in charge of distribution at **A. O. Smith Corp.** in Milwaukee. He moved into the new position this month from his former assignment of general sales manager for A. O. Smith's Southwest district, with headquarters at Houston.

Mr. Brinker will coordinate all matters related to distribution of the

company's products; he will provide general management service and direction to the manufacturing divisions in the distribution and marketing field, and will supervise advertising and sales promotion exhibits and displays and market analysis.

Phil D. Gardner has been appointed assistant manager of the A. O. Smith Corp. Eastern product service branch at Union, N. J.

Carolic Stove Corp. has appointed H. N. Minnis, formerly of Lodge Manufacturing Corp., South Pittsburg, Tenn., as sales representative, it is announced by Julius Klein, president.

Mr. Minnis will be in charge of Caloric sales in West Virginia and parts of Virginia.

The Noma Electric Corp. and the Radio Corporation of America have jointly announced that negotiations have been concluded for RCA's acquisition of The Estate Stove Co. of Hamilton, Ohio, which is now a division of Noma.

CECIL M. DUNN

The announcement by Henri Sadacca, president of Noma, and Frank M. Folsom, president of RCA, stated that the agreement is subject to approval of Noma stockholders, whose next regular meeting is scheduled for November 5.

It is planned that RCA will form a new subsidiary, the RCA-Estate Appliance Co., Inc. Cecil M. Dunn, president of Estate, will become president of the new subsidiary.

At the 25th anniversary of Harper-Wyman Co., Chicago, in which all employes participated, Philip S. Harper, founder, was presented with a wrist watch and a scroll commemorating the occasion. Mr. and Mrs. Harper are shown holding the scroll. Their son, Philip Jr., manager of the Princeton, Ill. plant, is at the left and their daughter, Mrs. Lamar Harper Wrisley, at the right.

Surface Combustion Corp., manufacturers of industrial, domestic and commercial heating equipment, have moved to new offices at 10333 West McNichols Road, Detroit, Mich. The firm, which has headquarters in Toledo, has maintained offices in Detroit for over a quarter of a century. The company manufacturers "Janitrol" domestic-commercial space heating equipment and "Surface" industrial heat treating furnaces.

Abner Baker is manager of the Janitrol division district office and Walter F. Herdrich is manager of the industrial sales district office.

Appointment of three new field sales representatives for the Janitrol domestic-commercial space heating division of Surface Combustion is announced by H. C. Gurney, sales manager of the division.

Richard H. Balk, formerly on special project assignments in the

Toledo area has been transferred to the Columbus territory.

James W. McAfee has been appointed sales representative for the State of West Virginia.

Thomas J. Langan will be sales representative on Janitrol automatic heating equipment in the Cleveland territory.

Appointment of George R. Postlewait as vice president of **Pacific International Products, Inc.** is announced by Robert Smith, president, of this San Marino, Calif., concern that manufactures valves and equipment for all compressed gases.

GEO. POSTLEWAIT

Mr. Postlewait's business background includes 20 years as a key sales executive with several other major manufacturers in the compressed gas valve and equipment field. During this time he was active as chairman of several educational committees in state L. P. gas associations, and conducted a series of service schools on "Regulation and Piping of L. P. Gas" in Indiana, Kentucky and Ohio. He also taught classes on this subject for the National LPGA at the University of Pittsburgh and at Purdue University.

Appointment of Frank N. Conrad as district sales manager for southern Ohio and northern Kentucky is announced by L. E. Clancy, director of sales, of **Detroit-Michigan Stove Co.**

Mr. Conrad will headquarter at the Sheraton-Gibson hotel, Cincinnati.

G. Louis Sigety has been appointed district sales manager for western Pennsylvania and all of West Virginia for Detroit-Michigan.

Mr. Sigety's address is 21 Maplewood, Pittsburgh, and he comes to Detroit-Michigan Stove Co. from the Kalamazoo Stove and Furnace Co., having served that organization as regional sales manager for Pennsylvania and West Virginia.

Both Mr. Conrad and Mr. Sigety will handle both domestic and commercial lines of the company.

**Ingersoll-Rand** has published a 36-page, pocket-size booklet presenting a brief history of the company, its plants and products and giving little known facts about the company.

There are nearly 100 pictures showing Ingersoll-Rand's products at work. A little anecdote about Simon Ingersoll and the origin of the first practical steam rock-drill, back in 1871, appears on the back cover. Many other Ingersoll-Rand developments are shown as milestones of progress.

For copies of this booklet, write Ingersoll-Rand, 11 Broadway, New York City.

American Tank and Supply Co., Dallas, has changed its firm name to **American Tank and Manufacturing Co.** in order to more nearly define its operations as a manufacturer of products for the L. P. gas industry. The change in name does not reflect a change in ownership, according to D. W. Scoggins, head of this company. Products manufactured for the industry include a complete line of motor fuel and tractor tailored tanks of all sizes and diameters, as well as pressure vessels for other industries.

Formed a little more than a year

ago, the company has gathered together a group of men long experienced in the production of tanks, and systems. D. W. Scoggins has been associated with the industry for seven years. Herman Bellmire, shop superintendent, has been in the tank business in Texas for eight years. Shop men employed by the company have likewise had years of experience.

An addition to the plant, now under construction, which increases floor space by one-third, together with installation of new handling equipment and a second set of rolls, will double the capacity of the plant.

V. P. Bresan, general sales manager of Radiator Specialty Co., Charlotte, N. C., has announced the appointment of George Einhart as advertising manager of the company.

In a move aimed at strengthening its Midwestern and Eastern market operations, General Controls Co., in September opened a new plant at Skokie, Ill., 10 miles north of Chicago.

The opening ceremony was presided over by General Controls leaders, including the company president, William A. Ray; vice president in charge of sales, J. F. Ray; vice president in charge of production, Alvin W. Ray; and Fred E. Weldon, sales manager, in charge of the new plant at Skokie.

Built at a cost of approximately $750,000, the California firm's Skokie plant is a modern structure with 60,000 square feet of floor space located on a 5-acre lot in the industrial development outside of Chicago. Additional land is available on the


HEMISPHERICAL HEADS

FOR STORAGE TANKS AND UNFIRED PRESSURE VESSELS

API-ASME CODE

One Piece Type in 16"- 28" Outside Diameter
37"- 38"- 40½"- 48" Inside Diameter

Segmental Type in 57½"- 60½"
76½"- 126" Inside Diameter

*Write for our Tank Head Catalog*

THE COMMERCIAL SHEARING & STAMPING CO.

P. O. Box 719 Youngstown, Ohio

# PROPANE TRUCK TANKS

## FOR ALL DELIVERY NEEDS

In streamline (illustrated) and walkway types, 1,181 gal. to 2,000 gal. water capacities. Constructed in accordance with A. S. M. E. Code, Par. U-69, 1950 edition. Mounted on your chassis complete with valves, fittings, pump, hoses. Unit ready for immediate use when picked up. Write for details.

Also 500 gal. & 1,000 gal. Domestic Tanks (Salem System)

Storage Tanks Up to 6,000 gals.

McNAMAR AND CROWLEY

**McNAMAR AND CROWLEY, INC.**
**SALEM 5, ILLINOIS**

# ALL VIKING Power-Driven LP-GAS PUMPS

## Available with Mechanical Seal or Metallic Packing

**Choose either style Viking pump. Available in bulk plant, truck mounting or farm dispensing units. Built from start to finish for handling LP-Gas. Features include non-lubricated inner bearing, safety valve on head, treated gaskets, etc.**

FIG. 190
TRUCK MOUNTING PUMP
WITH MECHANICAL SEAL

See Our Catalog in the BUTANE-PROPANE News CATALOG

*Send today for bulletins 2303B and SP312B.*

# VIKING PUMP CO. CEDAR FALLS IOWA

present site for future plant expansion.

Fred Weldon, formerly regional manager for the Eastern division, has been appointed sales manager of General Controls Co., with additional duties of responsibility for management of the new Skokie, Ill., factory near Chicago.

William L. Kell, assistant sales manager, has been additionally assigned as manager of the heating controls division. R. D. Grayson has been named manager of the appliance controls division — water heaters, ranges, etc.

Rudy Roedder has been appointed Western refrigeration controls division manager, under the supervision of Douglas Sterner, with headquarters at the General Controls' Midwest plant in Skokie, Ill.

Robert P. Marshall has been appointed superintendent of the air conditioning division at **Servel, Inc.**, according to Herman C. Kraemer, works manager.

In this capacity he will supervise the complete production of Servel "All-Year" air conditioners.

Carryl H. Pugh, former appliance salesman for the Ohio Fuel Gas Co., of Columbus, Ohio, has joined the retail sales development department at Servel.

Appointment of William T. Bauer as general sales manager of **Mission Appliance Corp.**, Los Angeles, manufacturer of water heaters, space heaters, and floor furnaces, is announced by Paul M. Dollard, president.

Mr. Bauer has been prominently identified with Mission Appliance since 1937 and with the manufacture and sale of water heaters and floor furnaces in California since 1923.

- Holds Pressures—Prevents Leakage
- Stops Gasket Sticking and Failure From Leakage
- Prevents Thread and Stud Galling or Seizure
- Never Hardens—Joints Easily Separated
- Prevents Rust and Corrosion
- Insoluble in All Petroleum Products

PLS

PLS is the one dependable sealing compound used by bulk plant operators everywhere. It's a sure-cure for costly leakage and maintenance.

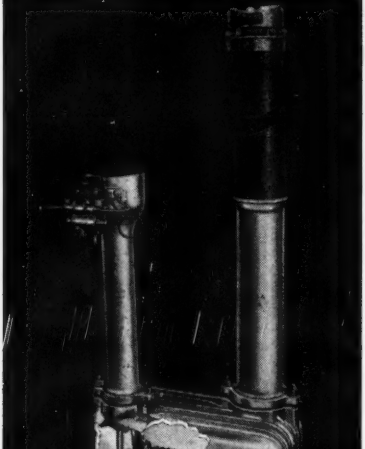
PLS is insoluble in a wide variety of services, including any petroleum liquid or gas . . . seals effectively at temperatures to 550°F. and pressures to 6000 psi.

TRY A SAMPLE AT OUR EXPENSE. Write Dept. B-11, 1838 Cuyler, Chicago 13, Illinois, for your free sample jar of PLS.

*Approved by Underwriters' and the Butane Propane Institute of Louisiana.*

UL

JOHN CRANE CRANE PACKING CO. CHICAGO



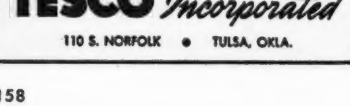
Model 950-B

**BLU-BLAZE**

**Stock Tank Heater**

Vent pipe Weep Holes plus ⅜" thick cast construction eliminates condensate problem.

- Constant high efficiency assured by BLU-BLAZE Draft Caps.
- Efficient drilled port, cast iron, Venturi type burner—18,000 BTU Capacity—Factory installed and adjusted.
- Automatic controls optional.




*Write for literature and prices*

**TESCO** *Incorporated*

110 S. NORFOLK • TULSA, OKLA.

TRUMAN ADKINS

**T. E. Gammage, Sr.**, president of **Pan American Casualty and Pan American Insurance Companies** of Houston, has announced that Truman Adkins is now associated with Pan American as director of L. P. gas education.

Since 1948, Mr. Adkins has been conducting courses in L. P. gases and equipment for Texas butane dealers throughout the state under the auspices of the Extension Division of The University of Texas in cooperation with the Texas Butane Dealers Assn. In addition to Mr. Adkins' duties of directing the L. P. gas educational activities of the Pan American Insurance companies, he will act as first assistant to Mr. L. E. Davis, chief L. P. gas safety engineer.

The Pan American insurance companies specialize in casualty insurance for the liquefied petroleum gas industry in nine states.

The retirement Sept. 30 of Hayes McCoy, long-time corporate counsel for **Cities Service Oil Co.** (Del.), was announced in September by Gentry Lee, vice president and general counsel.

Mr. McCoy joined Cities Service in 1916 and served on its legal staff at Bartlesville, Okla., until 1947, when he was named corporate counsel.

**Vulcan Rubber Products, Inc.**, Brooklyn, N.Y., announces the appointment of W. P. Frisco as factory manager. Mr. Frisco was technical director of the St. Clair Rubber Co. from 1944 until he assumed his new position with Vulcan.

S. L. STEINWENDER

Sheller L. Steinwender has been appointed to the new position of vice president-sales of Scaife Co.

Mr. Steinwender is known in the petroleum, gas, and many other industries through his service since 1944 with A. O. Smith Corp., where he was general sales manager of the Eastern district, located in New York City.

His responsibilities with Scaife Co. will include supervision of all sales activity of pressure vessels for gases, air and liquids, including liquefied petroleum gas cylinders.

Scaife Co. is celebrating this year its 150th anniversary.

J. W. CHRISTENSEN

R. T. HOOPES

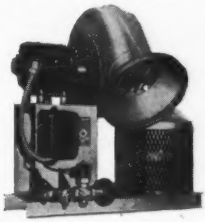
R. G. Halvorsen, vice president in charge of sales, **Hamilton Manufacturing Co.**, Two Rivers, Wis., has announced several changes in the sales organization of the company.

John W. Christensen is now manager-promotions, Home Appliance Division. He will be charged with the responsibility for all matters pertain-


**Hotter Heat per Penny with**

**Kilbury HEATER "homogenized heat"** ©

**Suspended Industrial Gas Heater — No Vent Required*. Heats over 2000 square feet for 3c per hour operating cost!**



*It Must Be Good . . .*
*Thousands sold! Performance proved!*
*Used by leading firms!*

Every day, more and more markets, factories, warehouses and offices are recognizing this revolutionary development in low-cost heating comfort, and are having it installed within a short time after inquiry.
Get the facts from your dealer . . . and get them straight!

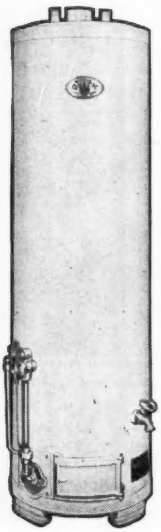
**Approved as an unvented heater, circulator type, for commercial and industrial use. Is not affected by the State Housing Act.*

**ALSO AVAILABLE IN ALL-ELECTRIC 230 AND 440-VOLT MODELS FOR USE WITH OR WITHOUT DUCTS**

*Write to Dept. BP for Explanatory FREE Booklet.*

**KILBURY MFG. CO., INC.**
14529 HAWTHORNE BLVD
DEPT BP • LAWNDALE, CALIF

THE QUICK WAY
TO WATER HEATER SALES



- **Advanced Design . . . for completely automatic operation.**
- **Fiberglas Insulation, both tops and sides . . . for efficiency and economy.**
- **Modest Initial Cost**

The QUICK Automatic Water Heater has many of the features found in more expensive heaters . . . plus some advantages to be found in no other heater. It's the choice of wise buyers who want a thoroughly satisfactory and economical water heater. It has sales-building eye appeal, too.

SECURITY MFG. CO.
1630 Oakland Kansas City 3, Mo.
SECURITY
*QUICK*
*AUTOMATIC*
WATER HEATERS
LP GAS


ing to the development of national and local dryer campaigns and promotions.

R. T. Hoopes will be manager-distributor sales, Home Appliance Division. His responsibilities will be of internal organization, production schedules, allocations, shipments, credit, complaints, service, requests for servicemen, etc.

Also is announced the appointment of three new regional representatives. Hicks Youngs will cover the Southern states with headquarters in New Orleans; Edward Doidge will handle the Middle Atlantic states from Washington, D. C., and Frank Tschannel will cover the North Central states from Minneapolis.

L. A. DIXON, JR.

W. F. Rockwell, Jr., president of **Rockwell Manufacturing Co.**, has announced the appointment of L. A. Dixon, Jr. as vice president of the company's meter and valve division. Mr. Dixon will coordinate the sale and manufacture of gas, water and oil meters, gas pressure regulators and Nordstrom valves.

Mr. Dixon, prior to his recent promotion, served as assistant vice president of the company's meter and valve division.

**Gas Equipment Co. Inc.**, Dallas, recently appointed Tom Simmons as service and sales engineer.

Prior to joining the company, Mr. Simmons was engaged in public relations work for Republic National Bank of Dallas. He is a graduate of Southern Methodist university.

C. B. OAKLEY

Cecil B. Oakley of Nashville, Tenn., has been appointed sales manager of Temco, Inc., gas appliance manufacturers, it is announced by W. B. Evans, president. He has been promoted up from the ranks, having served as field representative for that company during the past six years.

Mr. Oakley has established his office at the factory headquarters in Nashville. J. H. Holliday will serve as his assistant.

Temco, Inc., have been manufacturing for 30 years and feature L. P. gas heaters, floor and wall heaters, and clothes dryers.

**Pan American Casualty Co.**, of Houston, has just been advised by the Liquefied Petroleum Gas Assn., Inc., of Chicago, that it has been appointed an advisory member of the association's insurance committee for the year 1952-1953.

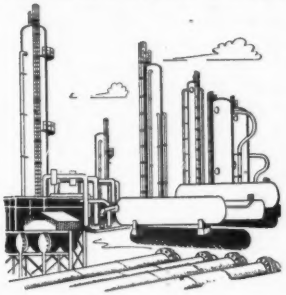
T. E. Gammage, Sr. is president of Pan American. This company, in addition to writing general casualty insurance lines, also provides specialized facilities to dealers of butane and propane gases in Texas and the South and Southwestern states.

**Southwest Gas Equipment Co.**, Liberal, Kan., will open the company's new office, display room and shop Nov. 14-15, according to an announcement received from Paul Maxwell, owner. Dealers and customers are invited to inspect the new facilities on those dates.

In addition to operating a local pro-


CITIES SERVICE

LIQUEFIED PETROLEUM GAS



- A DEPENDABLE SOURCE
- UNIFORM PRODUCTS
- A CAPABLE SUPPLIER
- TWENTY-FIVE YEARS EXPERIENCE

*. . . in L.P. gas also Cities Service means Good Service*

•

CITIES SERVICE OIL CO.

Delaware

•

Bartlesville, Okla.
Chicago, Illinois

*Other Sales Offices*

Cleveland
St. Paul
Kansas City
Toronto

MEMBER national LP-GAS PROMOTIONAL program

pane distribution and carburetion business, Southwest Gas Equipment Co. manufactures and rebuilds bulk delivery trucks, and wholesales a large number of equipment items and supplies needed by other distributors of L. P. gas and anhydrous ammonia.

Sunday, Nov. 16, will be reserved for special schools and demonstrations which will be conducted in the new shop quarters by representatives of the various equipment manufacturers whose lines are represented. The featured demonstrations of the day will be on ignition testing, engine tune-up, wheel balancing, and lubrication equipment.

The ability of a dealer to secure adequate supplies of equipment usually spells the difference between success or failure of his operation. Six years ago, the supply of LPG tanks and equipment presented a difficult problem to a Texas L.P. gas firm operated by J. Elwood Allen.

Mr. Allen, who was president of Allen Butane Co., of Denton, Texas, felt that something had to be done to offset a difficult supply problem which was becoming a barrier to his continuing operation.

Out of this need for equipment was born **North Texas Tank Co.** after what seemed an eternity of securing necessary materials, designing, testing and re-designing tanks, production was finally begun, in a small shop. From this beginning six years ago, the present North Texas Tank Co. at Denton has grown to a strong position in the LPG tank fabrication field.

As a pioneer in the truck and tractor tank field, the Nor-Tex fuel tank has become well known in the industry and today three new products are being marketed by the growing firm, including a self-contained, portable LPG motor fuel filling station, a portable bottle filling station, and the "Scout," designed for on-the-job convenience of LPG operators.

## Alabama Group Publishes Association Magazine

Joining the ranks of several other state LPG associations, the "Alabama LP-Gas News" made its first appearance with a September issue.

Well edited by John W. Rooney, executive secretary of the association, and containing much worth while material for its readers, this monthly magazine is certain to be of value to members, both in disseminating association news and in providing information upon industry problems in the state.

## Texas Inspectors Do Big Job On Inspection Routines

The annual report of the LPG Division of the Texas Railroad Commission, covering the first year's activities of the division, reveal that 1454 dealers were licensed to distribute butane and propane in that state.

The five inspectors of the division traveled 125,970 miles in the discharge of their duties during the year, and made 5233 inspections of butane-propane installations in schools, hospitals, churches, and other public buildings. Each member of the inspection staff is responsible for a territory larger than some of the most populous eastern states.

## Fred Greenwood Takes National Committee Job

Newly appointed chairman of the LPGA committee on insurance is Fred Greenwood, of Greenwood & Co., Gainesville, Texas. This post makes him an ex-officio member of the LPGA board of directors.

Mr. Greenwood is a former director of the Texas Butane Dealers Assn., and has been prominent in the activities of that organization for many years.

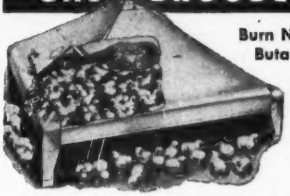
---

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (Title 39, United States Code, Section 233) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION

Of BUTANE-PROPANE *News*, published monthly at Los Angeles, California, for October 1, 1952.

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Jay Jenkins, 198 South Alvarado Street, Los Angeles


**BROWER**
**GAS BROODERS**



Burn Natural or Butane Gas

**Important Selling Features!**

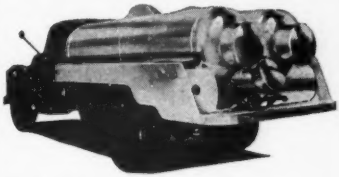
Chicks are SAFE—Robertshaw 100% Shut-off Valve turns off gas if pilot goes out. 1" fibreglass insulation between deflector plate and hover top conserves and directs heat against baffle plate. Radiator, deflector and baffle plate spread heat evenly. Thermostat controlled. Draft-proof ventilation. Adjustable legs. Thermometer. Two sizes—60" and 72" canopies.

Write for catalog and low dealer prices.

BROWER MFG. CO.

461 N. 3rd Quincy, Illinois

*World's Largest Line of Poultry Supplies*



1320 gallon single propane tank, pump, hose piped complete, ready to use, mounted on NEW 2 ton Chevrolet, 2 speed axle.

**$4,090.00**

*All sizes tanks and trucks, single or twin 600 gallon to 2000 gallon.*

IMMEDIATE DELIVERY

**WHITE RIVER DISTRIBUTORS, INC.**

Batesville, Arkansas

**Do You Still Need *this stuff?***

Do you still have to worry with packing? Tsk! Tsk! So you DON'T have a new leak-proof, mechanically sealed Corken LPG Pump. Well, we can supply the packing for ANY packed pumps. Corkenpak is a specially compounded plastic, moulded to fit shaft and box perfectly. It's non-porous; propane can't get through it. No lubrication needed, either. Use this packing to keep your old pump leak-free till you're ready to buy a new, mechanically sealed Corken Pump!

**A PAIR OF THESE MAY HELP:**

Pulling packing out is safer than blowing it out. Use a pair of Corken Flexhooks — No. 1 size for small shaft pumps, pair, $2.50. No. 2 for large pumps, pair, $3.00.

**CORKEN'S**
208 E. Grand RE 6-6518
Oklahoma City

**ADAMS**
**CHEERFULATORS**

**Fully automatic with capacities to handle moderate to heavy heating loads. CHEERFULATORS supply finest heating qualities at low gas consumption rates. Four models available.**
***Write today for full information.***

**ADAMS BROS. MFG. CO., INC.**
1500 NORTH AVE., W. PITTSBURGH 33, PA.


4, California: Executive Editor, Lynn C. Denny, 198 South Alvarado Street, Los Angeles 4, California; Editor, Carl Abell, 198 South Alvarado Street, Los Angeles 4, California.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

Jenkins Publications, Inc., 198 South Alvarado Street, Los Angeles 4, California. Jay Jenkins, Helene Jenkins, Eloise Jenkins, 198 South Alvarado Street, Los Angeles 4, California.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

JAY JENKINS, Publisher.

Sworn to and subscribed before me this 22nd day of September, 1952.

(Seal) DOROTHY B. NEWLON,
Notary Public.

In and for the County of Los Angeles, State of California.

(My commission expires November 2, 1952.)